



12-1-2011

# Teen Perceptions of Cellular Phones as a Communication Tool

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TEEN PERCEPTIONS OF CELLULAR PHONES AS A COMMUNICATION TOOL

by

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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Grand Forks, North Dakota

December

2011



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## ACKNOWLEDGEMENTS

The dissertation writing process has been my personal journey, along with many individuals in my life who have contributed to its successful completion. To this end, I express my sincere gratitude to the following people for their advice, unwavering support and encouragement.

Thank you to Dr. Gary Schnellert for your knowledge, time, and support to guide me through this process. To committee members: Dr. Stonehouse, Dr. Yearwood, Dr. Braathen, and Dr. Olson, your scholarly recommendations and professional guidance gave me insight to produce a quality study.

I would like to thank the colleagues from my University of North Dakota 2007-2010 Educational Leadership cohort team. To my professors, thank you for enhancing my professional development, inspiring my thinking and preparing me to meet this challenge. To my cohort classmates, thank you for modeling professionalism, demanding excellence, and stimulating quality discussion to expand my intellect.

To my former colleagues and friends at the Lake Area Career & Technology Center, your teamwork and support contributed to my love of leadership and gave me the confidence to begin this journey. To my colleagues at Cheney Middle School, your teamwork and support helped me finalize this journey and grow in my love leadership. To all, your friendship is treasured. Thank you to Mary Beth and Marilyn for your ideas



and assistance to polish my study. Thank you to Jennifer, Angie and Anne for your technical support and willingness to pilot my survey.

Thank you to my dear friends for listening and understood my absenteeism due to class commitments and homework. Bonnie, Shawn, Wayne, Jeanne, Donna, Kathy, Tim, Rick and Jo, thank for your encouragement and unwavering support. Your friendships are priceless!

To my family, it is because of you I am at this point in my life. To my parents, thank you for instilling the significance of education, the belief you can do anything you set your mind to, and the importance of finishing what you start. Hard work, patience and a never give up attitude has carried me through this process. I wish you could be here dad. To Barb, Diane and Dennis, you have always been there support and encourage me through humor and sound advice. Thank you for your unconditional love!

And finally, to my husband and best friend, Jim – I met you when I started this journey and you have encouraged me all the way. You have been steadfast through the ups and downs, and understanding as I burned the mid-night oil. You were always there with encouragement, even when I was unsure of the next step. Words cannot express how much your love and commitment has meant to me. For this, I am eternally grateful.

## ABSTRACT

The excitement and interest in innovative technologies has spanned centuries. However, the invention of the cellular phone has surpassed previous technology interests, and changed the way we communicate today. Teens make up the fastest growing market of current cellular phone users. Consequently, the purpose of this study was to determine teen perceptions of cellular phones as a communication tool by Midwest suburban middle students.

Foundational to the study was the “Evolution of Educational Technology” as a historical perspective of technological change, and how new technologies influence society, change communication, and influence how we learn (Saettler, 2004). The “Technology Adoption and Diffusion” model by Rogers (1995) served to help the researcher understand a person’s natural resistance to technological change and technology adoption before it is accepted and diffused to the majority of users.

Qualitative data were collected through a middle school located in a Midwestern suburb, teen focus groups, and open-ended survey questions. A Teen Cellular Phone survey was also used to acquire measurable data.

Findings revealed a majority of middle school teens own cellular phones. Findings revealed differences in access to technology between White students, and female Students of Color. Results suggest differences in how cellular phones are used between ethnic groups, and how cellular phones are used to communicate between males

and females. Results reveal cellular phones created some distractions for middle school teens in the study, yet data suggest a desire to use cellular phones in positive ways, such as a learning tool in school. These findings have implications and recommendations for teens, parents, and schools to manage the transformation of the cellular phone phenomenon for today's 21<sup>st</sup> Century learners.

## CHAPTER I

### INTRODUCTION

*“Though our tech tuned 21<sup>st</sup> century students are often more fluent in the use of technology than their parents or teachers, they will always need guidance in how to best apply these powerful tools to complex learning and creative tasks.”*  
(Trilling & Fadel, 2009, p. 70)

Technological change has been a catalyst for discussion and debate for centuries. The emergence of new systems or inventions have influenced society and changed the way people learn, work, and communicate (Saettler, 2004). From system theories on crop rotation to the invention of the computer, technological change can be conflicting as early adopters embrace its presence while laggards are skeptical of its use. In essence, this mixture of resistance and acceptance in the evolution of technology contributes to a “love-hate relationship” for its users. Cellular phones are the latest phenomenon in the evolution of technology and are at the forefront of discussion and debate about whether users should resist or adopt.

Research reveals the cellular phone is the most popular technology on the market today. A report by the Pew Research Center (Lenhart, 2010) noted 82% of American adults own a cellular phone, Blackberry, iPhone, or other related device. Teens, ages 12-17, are the fastest growing market of cellular phones users with 75% owning a cellular phone (Lenhart, 2009); revealing an increase from 2007 when two thirds of United States teens ages 13-19, owned or carried a cellular phone (Parker, 2007). Wireless connectivity



and advanced cellular phone features make cellular phones, the “must have” gadget for teens today.

Teens embrace cellular phones for a variety of opportunities. Instant communication anytime anywhere contributes to an underlying feeling of safety (Cyberbullyalert, 2008). Phone features such as text messaging, phone cameras, organization tools, and entertainment applications have changed the way teens entertain themselves and communicate (HarrisInteractive, 2008). High-tech cellular phone features and software applications have turned mobile phones into mini-PCs with Internet resources, instant messaging, and video capabilities (eSchool News Staff, 2006). The cellular phone is a ‘boom-box’ for this generation with its capacity to store thousands of music selections. Due to these advanced features, cellular phones have emerged as an educational tool, to enable, engage, and empower teens for learning (Project Tomorrow, 2011).

Despite cellular phone opportunities, there are perceived distractions associated with this device and how it is used for communication. Technological change naturally contributes to resistance due to loss of control, fear of misuse, or legal ramifications (Carr, 2011). Disruptive behaviors by teen cellular phone users have parents and schools questioning whether cellular phones are “Toy or Tool” (Anderson, 2009). Research suggests schools and parents are uncertain the benefits of cellular phones outweigh the disruptive behaviors associated with them such as, cheating, classroom disruptions, sexting, and harassment (KVOA.com, 2009).

Administrators have been cautious to embrace cellular phones in schools as districts have faced legal action in court for enforcing school cell phone policies and lost.

For example, in *Foster v. Raspberry*, (M.D. Ga. 2009) and *Klump vs. Nazareth Area School Dist.*, (E.D. Pa. 2006), the courts upheld a student's Fourth Amendment right to be secure against unreasonable searches following a cell phone violation at school. In *Miller v. Skumanick*, (M.D. Pa. 2009) the school was found in violation of a student's First Amendment rights of freedom of speech when penalized for sharing a suggestive photo. The debate between opportunities and distractions has schools across the nation conflicted as to whether to ban cellular phones to avoid problems or whether to embrace cellular phones as a learning tool to engage students.

As a middle level assistant principal and former technology teacher, the topic of teen cellular phone use became of interest to this researcher due to conflicting assumptions from student observations and a developing "love-hate relationship" on the part of the researcher for this new device. Teacher resistance to cellular phone use at school emerged as teachers observed obsessions middle level teens have with their phones, and the distractions created by them during the school day. Although the policy at Central Middle School (a pseudonym for the school participating in this study) has been to require students to turn cellular phones off and store them in their lockers before school and during the school day, policy violations have occurred as teens have been found texting by lockers, using phones in the bathroom, and leaving phones on during class so ringtones disrupt classrooms. After school, students have been observed scrambling to locate their cell phones from pockets and book bags. At the end of the day, hallways have been a stampede of students rushing to the commons, the school's cell phone safe zone, to make a call or send a text message.

Conversely, as a former information technology teacher, with a love for innovative technologies, this new tool has appeared to possess opportunities as a learning device. The researcher has often observed middle level teens displaying new phones, accessing the Internet, playing music, entering important dates, and sharing pictures. This conflict in teaching philosophy and observed daily teen behavior has led to a curiosity to identify how Midwest middle level teens were actually using cellular phones to communicate.

A need for the study was confirmed after professional discussion with a cohort of school principals, superintendents, and doctoral professors regarding their observations of teen cellular phone use at school. Administrators echoed similar observations and reported concerns in dealing with teen cellular phone use. This dialogue prompted research of the literature to determine if strategies or solutions were available to deal with the problem. Finding minimal research on the topic of teen cellular phone use as a communication tool, a need emerged to research and study this topic.

### The Evolution of Educational Technology

Historically, the emergence of new inventions, media, and systems influenced society and changed the way in which people learn, work, and communicate. Throughout this evolution, theorists have referred to these changes as: (a) a system of processes, or (b) hardware inventions; both referred to as “technology” (Saettler, 2004). For example, White (1964) described a system using a *process* called the three-field crop rotation as a systematic method for thinking and planning for field preparation to increase crop production, and this process was considered a form of technology. In comparison, inventions such as the wheel, clock, automobile or cellular phone are viewed as a



hardware invention, yet also are defined as technology. In some instances technology has been viewed as any system and invention that makes life easier (Carr, 2011). This evolution of systems-thinking and hardware technology are referred to as the study of “Educational Technology” theory (Saettler, 2004).

Educational technology defines the techniques, theory, and/or procedures teachers use within the class setting (Saettler, 2004). Greeks labeled it as, “a particular activity and a kind of systematic knowledge” (Mitcham, 1995, p. 163). Modern terms have expanded the definition as, “any systemized practical knowledge, based on experimentation and/or scientific theory, which enhances the capacity of society to produce goods and services, and which is embodied in productive skills, organizations, or machinery” (Gendron, 1977, p. 23). Over the centuries, educational technology evolved as the connection between systems, procedures, and emerging inventions. Educational technology integrates and supports each of its components.

The educational technology evolution has not been a fluid process, as change is naturally lined with levels of uncertainty and natural resistance. Rogers’ model of “Adoption and Diffusion” (1995), a theory introduced in the 1960’s, and still referenced today, categorizes how technology users progress through five levels and characterizes users at each phase of adoption. “Adoption” is defined as the selection of technology by an individual for use, while “diffusion” is defined as the stage in which technology skills evolve for general use (Carr, 2011). Rogers identified five categories of technology adopters: (a) innovators interested in technology, (b) early adopters interested in technology to solve problems, (c) early majority pragmatists representing the mainstream, (d) late majority skeptics less comfortable with technology, and (e) laggards unwilling to



adopt and critical of technology use (Rogers, 1995). Although other theories on technology adoption exist, this model illustrates how technology users contribute to the acceptance or resistance of technology change at various levels.

In education, instructional technology evolved from educational technology and embodies specific tasks used for teaching and learning (Galbraith, 1967). The

Commission on Instructional Technology (1970) defined instructional technology as,

a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction. (p. 27)

Theories of instructional technology can be traced back as far as 500-410 B.C. with the Elder Sophists which were freelance teachers who organized lectures and public debates and used various techniques to engage their audience. Although educational and instructional technology are systematic in theory, “media and hardware” have influenced the system (Ely, 1983). Today’s technologies offer opportunities for new ways of teaching and learning through laptops, the Internet, smartboards, and cellular phones at an increasing rate of adoption among students and educators (Carr, 2011).

Conversely, Jaffee (1998) revealed, the established practice of classroom teaching is fundamental to the reluctance to adopt technology. In education, technology may be rejected until it can either be incorporated into the educator's pedagogical model, or until the model itself evolves. Along with philosophical rationale for resistance, a study completed by Butler and Sellbom (2002), at Illinois State University revealed three factors contributing to faculty resistance to technology adoption including: lack of institutional support, lack of financial support, and lack of time to learn new technologies.

However, unlike earlier technologies, users today can individually access technology resources creating a bottom-up approach to the adoption of technology in the instructional technology process (Carr, 2011).

For decades, creativity and innovative technological thinking have been a part of the United States landscape and contributed to its status as a world leader (Whipps, 2009). Yet, technological change may be met with resistance. According to Anderson, as quoted in Saltrick, Honey, and Pasnik (2004):

Historically, each new medium of mass communication has, within a few years of its introduction, been condemned as a threat to the young people who use it most. Comic books, radio, movies, phones, and, of course, television in their time have all been blamed for “corrupting values,” “wasting time,” and “causing a decline in taste, morality, self-discipline, learning, and socialization” among children. (p. 4)

Television is an early example of an invention influential to educational technology, yet has been a point of contention for resisters. Activists against television media for learning state TV entertainment factors create passive learners and are seen as a carrot to engage students in the classroom (Carney, 2007). Concerns have also been raised by researchers about the disruption of social capital due to TV violence, aggressive behavior by adults and teens, desensitization of pain and suffering, and an impression the world is a dangerous place to be (Murray, 1995). A study in remote Indonesia (Olken, 2008) expressed, “villages with better access to television and radio signals—and thus villages where villagers spend more time watching television and listening to radio—have lower levels of participation in a wide range of village activities” (p. 3).

Nevertheless, in a study by the Henry J. Kaiser Family Foundation (Rideout et al., 2010) entitled, *Generation M<sup>2</sup>: Media in the Lives of 8- to 18-Year-Olds*, it was noted television continues to serve as a major communication media to provide opportunities

for families through primetime broadcasting, news, weather, educational programming, and shopping. Educational or instructional television has raised the standard of instruction and enhanced the system of communicating information to learners since the mid 1930s (Saettler, 2004). The Education Department of Corporation for Public Broadcasting (2004) also confirmed, with proper implementation, television media can contribute to student achievement.

According to Trilling and Fadel (2009), each generation of learners is surrounded by more digital devices, advanced technologies and more collaborative ways of working. For today's teens, cellular phones are viewed as the new "Electronic Book bag" (Kharif, 2008), with access to online curriculums, e-books, teleconferencing messaging and tools, and transfer reports (Trilling & Fadel, 2009). Educational technology challenges educators to identify and maintain a focus on curricular goals while creatively integrating new technology inventions to enhance learning.

In the evolution of educational technology, cellular phones are viewed as a technological invention yet serve as a tool within the communication system as well. Communication theory reveals how humans communicate within these systems and through these devices (Mielke, 1972). Today's generation of "millennial" communicators contributes to the cellular phone phenomenon. Millennials, also known as "Gen-M" individuals, encompasses the generation born from 1977 to 2000. They have grown up immersed in technology and thrive on connectedness and collaboration (Rideout, Foehr, & Roberts, 2010). Rosen (2011) further identified the "iGeneration" born from 2000 to present as users of today's most popular "i" technologies such as the Internet, iPhone, iPod, and iPad. Aptitude for technology and communication styles of Gen-M and *i*-Gen



users have thrust cellular phones to the forefront of technology evolution and transformed the way in which society communicates. For the remainder of this study, both generations will be referred to as *i*-Gens.

Trilling and Fadel (2009) stated, powerful forces have converged to create the perfect storm for schools to embark on the 21<sup>st</sup> century learning through technology integration. Technology, combined with information, cognitive human decision-making, and smaller intelligent machines describes information technology systems at the time of this report as opposed to drill and practice systems from the past (Hilgard, 1980). The world in which we live and learn is entering an age of knowledge work, thinking tools, digital lifestyles, and learning research greatly influenced by technology. The 21<sup>st</sup> century global economy requires high-levels of creativity and innovation to invent and improve services, and to increase critical thinking and problem-solving skills (Trilling & Fadel, 2009). Consequently, teens must learn how to communicate and collaborate using digital tools and strategies to compete in the classroom and in the digital workplace. Schools, therefore, must identify their role in this process as adopters or resisters to change which historically has proven futile based on the evolution of educational technology.

#### Statement of the Problem

Technological change creates opportunities and distractions for users, along with uncertainty as individual users determine whether to adopt or resist technology. Historically, the evolution of educational technology reveals resistance to change, yet eventual adoption (Saettler, 2004). Cellular phone ownership and use by teens has increased, and is reflected in the way teens communicate in their everyday lives and at

school. Along with increased teen cellular phone use, the communication styles and technology aptitudes of *i*-Gen teens influence how they think and communicate.

To prepare for this technological transformation, schools must understand how students use cell phones to communicate to manage the teen cellular phone phenomenon. Minimal scholarly research could be found on the topic, although notable discussion originated from the professional community. Extensive searches of the Chester Fritz Library, scholarly journals, and electronic resources also revealed limited information on the topic. Lack of information is likely to hinder school leaders in making decisions, thus the study will determine teen perceptions of cellular phones as a communication tool.

#### Purpose of the Study

Growing national market trends indicate there are increased levels of teen cellular phone ownership. However, the data does not distinguish the level of ownership by Midwest suburban teens. Data are also limited about how Midwest teens are using cellular phones among gender and ethnic groups; and how they are using cell phones to communicate between peers, for entertainment, or to share information as a learning tool. As *i*-Gens teens represent the middle level students in today's classrooms, understanding their behaviors and communication styles may assist schools in proactive planning for 21<sup>st</sup> Century learners. The purpose of this study was to determine teen perceptions of cellular phones as a communication tool.

The following research questions guided this study:

1. What is the current level of cellular phone ownership and usage by middle level teens in a Midwest suburban community?
2. What opportunities or distractions are generated through cellular phone use?

3. What are teen perceptions of how they use cellular phones to communicate in their everyday lives?
4. How does teen cellular phone use affect the school environment?

#### Significance of the Study

Results of this study will help to establish a baseline for Midwest suburban school districts to validate the actual level of teen cellular phone ownership, how teens are using cell phones to communicate, and teen perceptions on how cellular phones can be used for learning. Student perceptions serve Midwest suburban school districts in understanding student populations. Data will be used by teens, parents, and schools in making decisions to positively use cellular phones for communication. Results of the study were used to create recommendations for students, parents, and schools to manage the effect of teen cellular phone use.

#### Delimitations of the Study

The following delimitations applied to this study:

1. The scope of the study was limited to one suburban middle school (Central Middle School) in the Midwest.
2. The study reflects the time frame in which it was given.
3. Focus group participants were representative of Central Middle School, but located at a separate building from the school.
4. Responses were anonymous. So, respondents were not required to use a login or password to access the online survey.



## Research Bias

The researcher was employed by the school district in which the study was completed; yet the researcher was physically removed from the data collection process through the use of a moderator for focus group data collection and an anonymous online survey instrument.

## Assumptions

The following assumptions were made regarding this study:

1. Students who took part in the study were representative of a middle level student population, Grades 6-8, in a suburban community.
2. After focus group discussion and small group pilot testing, the survey instrument was considered a valid and reliable means to assess student perceptions regarding the use of cellular phones.
3. Respondents answered the survey honestly and accurately.

## Definitions of Terms

The following are the definitions of terminology integral to the conceptual framework of the study:

2G, 3G, 4G Networks: Acronyms which are used to describe the various generations of mobile technology communication standards and their capacities to transmit data for wireless communication.

Cellular phone: Refers to a mobile phone using cellular technology, and for the purpose of this study will also be referred to as smartphones, cell phones, or mobile devices.

Cellular Telecommunication Industry Association (CTIA): Cellular

Telecommunication Industry Association is an international industry trade group that represents a wide variety of interests on behalf of the wireless telecommunications industry in the United States. Its members include international cellular, personal communication services, enhanced specialized mobile radio providers and suppliers, and providers and manufacturers of wireless data services and products.

Cyberbullying: An anti-social behavior perpetrated either online or via cell phones (Cyberbullyalert.com, 2008).

Digital citizenship: Refers to members of society using Internet, cellular phones, and other digital media in a responsible, safe, and ethical manner.

Digital life: Refers to the 24/7 media world in which our kids live through the Internet, cellular phones, instantly viral, replicable, and viewable through invisible audiences.

Digital literacy: Refers to technological media education through curriculum, critical thinking, collaboration, and basic learning tools.

Electronic book bag: Cellular phones or smartphones with applications to contribute to student learning including: Internet access, learning applications, online curriculums, e-mail, etc.

Free agent learners: Refers to students defining and creating their own education path beyond the classroom teacher and textbook through alternate sources such as: student collaboration, online assessments, information sharing on Facebook, cellular phone applications, etc.



Generation M: Refers to teens that have been born and raised from 1977 to 2000.

Also referred to as digital natives, Gen-M, M<sup>2</sup>, generation 'Y' and generation 'Z.'

iGeneration: Also referred to as *i*Gens, the generation born between 2000 and the present. The *i* represents the Internet along with the many devices that are popular with today's teens, the iPhone, iPod, Wii, iTunes, and iPad. For the purpose of this study, teens will be referred to as *i*-Gens.

Sexting: Refers to the sharing and forwarding of sexually suggestive nude or nearly nude images by minor teens (Lenhart, 2009b).

Social networking: Refers to a community where people connect and communicate via the Internet through e-mails, blogs, messaging and chat rooms.

Texting: A brief electronic message sent between cellular phones, containing text composed by the sender (Text message, n.d.).

### Organization of the Study

Chapter I consists of the background, theoretical framework, statement of the problem, purpose of the study, research questions, significance of the study, delimitations research bias, assumptions, and definition of terms. Chapter II consists of the literature review related to cellular phones including the phenomenon, evolution and market trends, parent and teen usage, opportunities, distractions, policies and cellular phones in education. Chapter III presents the methods and design layout of the research. Chapter IV reports the main findings pertaining to the study research questions, and data collection from the study. Chapter V presents the summary, discussion, limitations, conclusions, and recommendations for this study.

## CHAPTER II

### REVIEW OF THE LITERATURE

Cellular phones and smart-phones (a high-end cellular phone that combines an operating system and a cellular phone) are the latest invention and phenomenon in the evolution of technology. A report by the Pew Research Center (Lenhart, 2010) noted 82% of American adults own a cellular phone, Blackberry, iPhone, or other related device. Further, an equal number of males and females are reported to be using cellular phones with 90% of adults aging between 18-29 owning a cellular phone versus 57% of adults 65 or older. Additionally, teens, ages 12-17, are the fastest growing market of cellular phones users with 75% owning a cellular phone (Lenhart, 2009). The cellular phone phenomenon illustrates the most recent evolution of educational technology theory and its impact on this generation of users.

#### The Evolution of Cellular Phones

The Golden Age of Radio lasted from the early 1920s through the late 1940s with police using mobile radios to stay in contact with each other. Bell Laboratories expanded the idea in 1947 to a mobile car phone (Cell Phone History, 2009). However, the lack of standardization made portable telephones unavailable to the average citizen. In 1983, Motorola advanced mobile technology by building the infrastructure needed to transmit wireless communications and released the first commercially available handheld mobile phone, the DynaTAC 8000X. The new mobile phone phenomenon fast became a status

symbol for the rich at \$3,995 a phone and a catalyst for the world of cellular phone service today (Edwards, 2009).

By the 1990s, the Global System for Mobile Communications and the Code Division for Multiple Access made advancements in wireless networks and cellular connectivity. Advancements from the first analog wave technology to digital networking expanded the number of channels a cellular phone could use to handle calls. High speed 2G and 3G cellular networks increased data transmission rates, enhanced phone call clarity, and expanded services for video and messaging. In 2010, 4G networks introduced even higher data transfer rates to ensure quality of service to improve video and sound (Wireless Internet, 2011). The 4G network turned the average cellular phone into smartphones due to (a) a virtualization of layers for better data transfer, and (b) cellular phone operating systems for users to multi-task between phone calls (Piraro, 2009).

In 2011, cellular phone users could choose from over two dozen cellular phone service providers to purchase national, specialty and/or prepaid service phone plans (Cellphones4US.com, 2011). Service capabilities, cellular phone features, and affordability have been catalysts for the increase in cellular phone use among adults and teens today. Service capabilities and increased competition have generated cost effective ways for families to equip each household member with a cellular phone. Depending on the service provider, phone style and service plan, cell phones can be purchased anywhere from \$0 to \$499, with monthly service plans ranging from \$40.00 for an individual plan to \$120.00 for an unlimited family access plan (Verizon Wireless, 2011a).

Cellular phones provide basic technology features such as calling, text messaging, applications and photo features. Whereas, smartphones combine calling features along



with an operating system to allow the user to run productivity applications while multi-tasking between calls, video and applications. Smart-phones have also expanded the use of video calling which allows the user not only to hear their caller also but to see them through video (Apple Inc., 2011). This competitive market of affordable cellular phones, smart-phones and service plans has opened the door for users of all socio-economic levels and created opportunities for teens and adults of all ages.

### Growing Trends in Cellular Phone Ownership and Usage

Data indicates the cellular phone is the most popular technology on the market and the fastest growing among teens. In a survey by Zelos Group, a technology marketing analyst organization, not having a cell phone is “a social faux pas for kids” (Batista, 2003). Additionally, “Four in 10 (40%) teens say they would die without their cell phones, and nearly half (46%) say having a cell phone is the key to their social lives” (Trim, 2009). Further, teens are using cellular phones on a daily basis to communicate with family and friends (Lenhart, 2010).

The Henry J. Kaiser Family Foundation Study (Rideout et al., 2010) concluded there has been an explosion in cellular phone ownership and usage by teens over the past 5 years, citing two thirds (66%) of teens ages 8 to 18 own and use cellular phones. The study also cited ownership and usage increases among adolescents 8- to 10-years-old from 21% to 31% , youths 11- to 14-years-old increasing from 36%- to 69%, and teens 15- to 18-years-old rising from 56% to 85% (Rideout et al., 2010). This explosion is global – for instance, 25% of Japanese children 11-12 years were reported to own a cellphone versus 80% of Korean youths (GSM Association & NTT DOCOMO, 2009). Evidently,

middle level teens are one of the largest markets of cellular phone owners and users today.

A catalyst for the cellular phone phenomenon is the fact cellular phones can be used for text messaging and not just for talking. Although texting began as an add-on feature for businesses, today it has become the main reason many teens carry a cellular phone. This feature allows teens to silently connect with users anytime and anywhere to socialize and instantly share private information. A national survey reported 46% of teens like texting because they can multitask, which allows the user to operate the cellular phone while watching television, using the computer or listening to music (HarrisInteractive, 2008). Further, 42% reported texting was a faster way to communicate. Females enjoy multitasking and waiting for messages; while for males, it is just fun, and they would rather text than talk to others in person (HarrisInteractive, 2008).

Cellular phone features have also changed the way daily events are captured and tasks are completed. This tool has evolved into to a powerful entertainment tool to capture special moments and share social events around the globe. For instance, almost every cellular phone today has been designed with a built in digital camera and/or digital recorders to capture photos and small video clips (Verizon Wireless, 2011a). Video features generate face-to-face conferencing via Internet resources such as Skype (Johnson, 2010). Cellular phones also allow the average caller to take pictures, capture video clips to store in albums, post to websites, and share with family and friends.

Social network sites provide a forum for teens to connect and communicate with friends while away from their computer. "Social Networking" can be defined as a community where people connect and communicate via the Internet through e-mails,

blogs, messaging and chat rooms (Shoemaker-Galloway, 2007). An international study of teen mobile use by the GSM Associations (2009), described the influences by teens as network externality. In other words, when a student purchases a cellular phone for personal needs, it was likely 24% of their three closest friends purchased a cellular phone around the same time. Network externality suggests the greater the number of individuals that own a cellular phone, the more valuable those cellular phones become. In summary, social networking has influenced the growing market and changing trend of teen cellular phone ownership and usage respectively.

A survey by the Pew Internet Research Center (Lenhart, 2010) reported cellular phones have been closing the “digital divide” as minorities make up a larger share of cell only homes than the majority of the population and are more likely to use their mobile phones to access the Internet, text message and play music than *whites*. According to Horrigan (2008), there has been an increase in teen cellular phone usage among Hispanics and African Americans ages 10-18 – 56% for Hispanics and 50% for African Americans. Fifty-two percent (52%), 65%, and 80% of teens use mobile phones in China, Japan, and Korea, respectively. Sixty-two percent (62%) of Mexican teens own a cellular phone (GSM Association & NTT DOCOMO, 2009). Therefore, this growing trend of cell usage indicates that cellular phone technology has a great potential to reduce the digital divide among ethnic groups and between those of low socio-economic status and the more affluent society.

#### Parent Cellular Phone Usage

According to the Pew Internet Research Center for the People and the Press (2010), one in four (25%) of United States households no longer have a landline



telephone, with 30% of Hispanics and 49% of adults ages 25-49 reporting cell-phone only homes. Further, 82% of American adults own a cellular phone. Men and women rate equally in their ownership of mobiles phones—83% and 81% respectively. Income and education have the greatest impact on cellular phone ownership by adults, with incomes contributing to the largest gap among adult cellular phone users. Blacks and Hispanics are larger users of cellular phones than Caucasians at 87% and 80% respectfully. Further, there was a difference in adult cellular phone ownership due to socioeconomic status with approximately 70% of adults earning \$30,000 or less likely to own a cellular phone compared to 93% of adults making \$75,000 (Pew Internet Research Center for the People and the Press, 2010). Even so, equity among ethnicities is relatively equal.

Adults predominantly use cellular phones to make calls. The average adult makes and receives at least five calls a day, with high-end users making up to 30 calls a day while adult users reported sending five or more texts per day (Pew Internet Research Center for the People and the Press, 2010). Further, minorities are more likely to text message and frequently use all of their cellular phone features than Caucasians. Evidently, adults rely increasingly on cellular phones for daily communication and increased texting changes the dynamics of interactions between adults and teens.

Parents with children under age 18 are more intense users of cellular phones than adults without children and are more likely to own a cellular phone than non-parents (Lenhart, 2010). Further, 66% of parents are more likely to make five or more calls per day than 44% of non-parents. Adults report cellular phones make them feel safe at 91% (Pew Research Center for the People and the Press, 2010). Socially, parents view cellular phones as a way to check in with friends and family, plan on the fly, and eliminate

boredom due to social connectivity (Pew Internet Research Center for the People and the Press, 2010).

Schools have noted increased parent cellular phone experiences influence their children's technology expectations in schools. For instance, in a report by Project Tomorrow (2011), "58% of parents own a smart phone, 38% have taken online classes, and 57% use discussion boards and social networking sites to communicate" (p. 13). Parent's increased awareness and interaction with technological resources, along with concerns about their child's education, has led to parent movements demanding increased use of emerging technologies to supplement curriculums and/or replace traditional classroom instruction (Project Tomorrow, 2011).

#### Teen Cellular Phone Usage

According Rosen (2011), in the world of teen users, "everything technological are not "tools" at all-they simply are." (p. 12). Teens view cellular phones as just another tool to use for communication, productivity, entertainment, and information access (Kolb, 2010). Therefore, understanding the characteristics of teens, along with their communication styles remains important to understanding how this generation thinks, learns and communicates.

Millennials are individuals born between 1977 and 2000. In a report completed by the McRel Foundation (Woempner, 2007), Generation M (Gen-M) teens are digital natives; "M" referring to "millennials or multi-taskers." They are further described as Generation 'Y'—born between 1978 and 1990 and Generation 'Z'—born between 1991 and 2000 (Tulgan, 2009). Gen-M teens have grown up with technology, are multi-taskers, prefer graphics before text, respond to instant gratification, enjoy social



networking, like random access, and expect adults to include them in decision-making (Woempner, 2007). Millennials have unique characteristics, such as admiration for parents, open and eager, team oriented, demanding of themselves, multi-taskers, socially conscious, and pressured to succeed (Coates, 2007). Further, the millennials communication styles can be viewed as connected, instantaneous and impatient.

The millennials have lived during the era of rapid technological changes and a highly interconnected global world. According to Rosen (2011), for *i*-Gens, “Their WWW doesn’t stand for World Wide Web, it stands for Whatever, Whenever, Wherever” (p. 12). This generation has tolerance for increased interactions or collaboration with peers (Tulgan, 2009). Gone are the days of the morning newspaper to receive yesterday’s news; today’s users live in the moment and obtain information instantly, at their fingers, 24-7 (Rainer & Rainer, 2010). For the remainder of this study, millennials, *igeneration*, and Gen-M teens will be referred to as *i*-Gens.

According to the Kaiser report (Rideout et al., 2010), teens ages 11-14 spend approximately 8 to 12 hours per day multi-tasking media including television, music, computer, cellular phones, and video games. In a study by the George Marshall Applied Cognition Laboratory, 3,000 *i*-Gen respondents were asked how many hours a day they engage in technological media. Teens ages 9-12 reported 8.5 hours, teens ages 13-15 reported 16 hours, while teens ages 16-18 reported 20 hours (cited in Rosen, 2011).

*i*-Gen teens go beyond the classroom to locate technology-based learning experiences which are not necessarily directed by teachers or assignments. A report by Project Tomorrow (2010) noted *i*-Gen teens are using technology to become “free agent learners.” Teens experience their own learning through peer collaboration, information

sharing, tutoring via Facebook, online games, and tests. They are interested in using cellular phones for organization and productivity, and computers for podcasts and online classes. They are also interested in using their personal media tools, such as, cellular phones, laptops, and iPods for educational purposes.

*i*-Gens have unique communication and learning styles, morphing education through thinking tools, learning research, and living digital lifestyles supported by 21st century learning theories (Trilling & Fadel, 2009). The common-place nature of technology has established their comfort in communicating through e-mail, social networks, and text messaging versus in person (Rebore & Walmsley, 2010). With the need for schools to engage and retain all students, technology may just be the motivating tool to attract students especially for the *i*-Gen learner (Rosen, 2011). However, schools will not only need to evaluate their curriculums but also recognize the power in the digital devices to engage, enable, and empower *i*-Gen learners.

#### Cellular Phone User Opportunities

One of the most emphasized opportunities cellular phones have created for teens and parents is "Safety." For some parents, the main reason cellular phones were purchased was in the event of an emergency (Reardon, 2008). According to Trim (2009), "most teens agree that cell phones make them feel safe. Three out of four teens (79%) use their cell phones to call for a ride. One third (35%) use their cell phones to help someone else who is in trouble" (p. 3). Many parents argue in an age where school violence exists, cellular phones provide an instant connection between children and parents in the event of a threat. Some parents have even gone as far as purchasing GPS-based services to

allow them to track their child by cellular phone (Parmar, 2010). Parents also want children to carry cellular phones in school in case they need help (Montano, 2010).

Cellular phones provide teens with instant access to help and communication regardless of the location. Add on features such as Verizon's Family Locator, further expand the capabilities of cellular phones as it can be used as a tracking device as children arrive and leave locations such as church, school and home (Verizon Wireless, 2011b). Additionally, texting replaces talking on cellular phones, so users can multi-task, maintain privacy, and control when they communicate. On average, teen cellular phone users between the ages of 12-17 send 39.1 text messages per day, with 15% sending over 200 messages per day (Lenart, Smith, Purcell, & Zickurh, 2010). Seventy-two percent (72%) of teens claim they can text blindfolded with a QWERTY cellular phone keyboard (Parker, 2007).

Today's cellular phones and smartphones have become high-tech mobile computers with operating systems and serve as calendar, planner, camera, Internet resource, entertainment system, and video talking tool (Andersen, 2009). According to the report by Project Tomorrow (2010), approximately 72% of students use their mobile device to look up information on the Internet, over half (56%) of students Grades 6-8 use cellular phones to receive alerts and reminders, 45% access books online, while 45% play educational games. In a report by the Kaiser Family Foundation:

Minority youth report being the heaviest consumers of media content via cell phones. Black youth spend the most time using their phones for music, games, and videos: almost an hour and a half (1:28), compared to 1:04 for Hispanics and :26 among White youth. (Rideout et al., 2010, p. 19)

Today's cellular phones and smartphones allow users to browse, use online applications, and retrieve web resources anytime anywhere (Verizon Wireless, 2011a).



Today, cellular phone users can connect to people worldwide while walking down the street connecting to online web sites such as Facebook, Bebo, and MySpace (Shoemaker-Galloway, 2007). As social networking becomes popular, 14% of teens report daily e-mailing to friends. African Americans are the active mobile web users, surpassing Whites and Hispanics (Lenart et al., 2010). Fifty-five percent of teen users ages 12-17, report creating a social networking profile to post videos, photos and text messages to friends.

Digital photos, games, music, and entertainment applications not only allow cellular phone users to pass the time, but also create unique opportunities for users to utilize their cellular phone as a toy or tool. Today's cellular phones are portable digital photo albums, used with instant messaging features allow users to send photos quickly around the world (Apple, 2011). Advanced graphic features, such as Video on Demand, have television enthusiasts elated as cellular phones now allows users to watch their favorite television shows, view golf live, and/or get the latest on local and national news via a cellular phone (Verizon Wireless, 2011a). The unique features of cellular phones enhance creativity and promote higher order skills for today's learners as they can research and capture field data on the fly and upload information to cloud applications for projects.

Basic cellular phone features such as calculators, calendars and voice recording applications allow users to get organized and stay organized. E-mail services like Microsoft Windows Phones 7 connect users to their e-mail while on the go and allow them to read and reply to e-mails, respond to meeting invites, and organize e-mails (Microsoft, 2011). Video applications, such as Skype, stretch the boundaries of today's

cellular phone technology and permit users to stay connected to their work and family even when they are miles apart through video-to-video conferencing (Skype, 2011).

While the invention of the cellular phone has generated numerous opportunities in the daily lives of users, its use has also generated debate centering on phone etiquette, and issues of privacy, ethical use and legal use. Public cellular phone etiquette defines ground rules for respectful use of this device in public situations, social surroundings, and family settings. Faull (2006) described off-limit areas for cellular phone use in public settings such as movies, libraries, medical facilities, cemeteries, places of worship, and general public transportation areas. However, many users have become down-right rude in social settings due to the cellular phone obsession.

Respectful behavior and cellular phone etiquette should also be a topic of conversation for families. Faull (2006) stated, “It’s important to let your children know that when a person steps out of a social or familial situation to use a mobile phone, they keep themselves from experiencing the moment . . .” (p. 1). Cellular phone users should consciously give consideration to the person, meeting, and/or business at hand versus making incoming phone call or text a priority. For instance, if a call comes in, users should excuse themselves from the conversation before answering. Faull (2006) suggested establishing “quiet zones” and “phone-free” times for respectful and responsible cellular phone use. Teens are losing sleep due to their 24/7 obsession to with their cellular phone to maintain social networking, conversations and texting (McCann, 2008). Parents can designate times when teens must shut off phones or turn them in for the night to model and monitor phone etiquette (Faull, 2006). As Trilling and Fadel (2009) stated:

Though our tech tuned 21<sup>st</sup> century students are often more fluent in the use of technology than their parents or teachers, they will always need guidance in how to best apply these powerful tools to complex learning and creative tasks. (p. 70)

Although phones can capture photo and video, it would be considered immoral to capture photos of vulnerable people, nude photos and/or persons in inappropriate places to distribute across social networks. This may not only be immoral, but also in some cases, illegal (Hinduja & Patchin, 2011). In the past, the media has reported immoral and unethical behavior by professional athletes and government officials who have used cellular phones to transfer lewd photos or engage in vulgar texting conversations. Digital citizenship can be established to teach teens how to use cellular phones, the Internet and digital media through responsible actions (Commonsense Media, 2009). Appropriate, proper, social norms for cellular phone use must be established, integrated and followed. Parents have an obligation to define expectations and teach their children respectful and ethical behavior pertaining to its use.

According to Faull (2006), parents teaching children cell phone etiquette felt it was important to let them know rules for using mobile phones in public situations. Whether shutting phones off during a family meal, in a restaurant, or in the middle of an informal group discussion, parents must define what rude cellular phone behaviors look like and strive to model acceptable cellular phone etiquette themselves. Setting guidelines for appropriate use will help to improve private, family, and public communications.

#### Cellular Phone Distractions

The National Safety Council (2010) reported 28% of all automobile accidents or 1.6 million crashes occur per year due to hand-held or hands-free cell phones. As a result, many states have established legislation requiring the use of hands-free devices while



driving or banned the use of cell phones while driving all together (Cell Phone Safety, 2011). Businesses are also asking patrons to shut phones off, put them on vibrate, or refrain from using cellular devices while doing business. Cellular phones are being blamed for meeting tardiness as staffers are using cellular phones as an excuse to call colleagues when running late (Batista, 2003). Further, New York City passed a law which fines a person if their phone rings during a public performance (Batista, 2003). States such as Oklahoma and New York restrict the use of cellular phones by faculty who are expected to eliminate cellular phone use during the school day (PBP Executive Reports, 2009).

Schools around the nation are still grappling with whether to embrace cellular phones as a necessary tool in school or to ban them all together. The use of cellular phones has typically been underrated as a desired media at school (Johnson, 2010). While proponents of cellular phones declare them to be a potential learning tool for online resources, communication, and multi-media creativity, many school leaders only see them as a nuisance with their host of likely distractions from student ring tones, e-mails, texting, tweeting, to actual cheating (Trilling & Fadel, 2009). Ultimately, cellular phones have created a love-hate relationship for students, parents, and school personnel.

Cellular phone's instant messaging and Internet social networking sites appear to be the most common ways for teens to harrass others. According to a report by Hinduja and Patchin of the Cyberbullying Research Center (2011), cyberbullying can be defined as "willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices" (p. 1). Although bullying has been a societal problem for generations, cyberbullying takes on an added twist from schoolyard bullying as messages



can be replicated and go viral to dozens of people at a time and instantly (Richmond, 2010). Cyberbullying has magnified backyard bullying as behaviors cross geographical boundaries due to technological services with offenders becoming even more vicious due to the anonymity of the user (Cyberbullyalert.com, 2008).

Approximately 32% of teens, ages 11-18, reported being a victim and/or an offender of cyberbullying. Girls are reportedly more likely to be victims of cyberbullying than boys—38% to 26% respectively (Lenhart, 2007). According to extensive research on middle school age students and teens online, the fastest growing problems within the world of cyberbullying are (Cyberbullyalert.com, 2008):

- Stealing an individual's name and password to a social networking site, and then using their profile to post rumors, gossip, or pass around other damaging information.
- Altering photographs using Photoshop or other photo editing software in order to humiliate the individual.
- Recording conversations without the individual's knowledge or consent, then posting the call online.

The effects of cyberbullying can ultimately have a negative impact on the lives of cellular phone users, school environments, and society. According to the Cyberbullying Research Center (Hinduja & Patchin, 2011), victims who experience cyberbullying report feeling afraid, embarrassed to go to school, depressed, and they have self-esteem. In 2010, numerous incidents of cyberbullying were reported which led to teen suicides in the United States (Hartwell-Walker, 2010). Midwest communities have also experienced

such concerns, as a 15-year-old girl took her own life after constant teasing and taunting from text message and over Facebook (Walder, 2010).

Cyberbullying has been difficult for schools as most of the behavior actually take place outside of school where administrators/school districts have limited authority, yet has an impact on students during the school day. Schools must then rely on parents who may be oblivious to the problem and/or have limited technical skills to monitor their children's behavior via technology devices (Richmond, 2010). The instantaneous messaging of cellular phones comments leaves little time for users to confront or squelch rumors before they are widespread, making cyberbullying a greater problem than bullying was a decade ago.

An equally disturbing trend by cellular users has been the use of built-in cameras to take nude photos, known or unknown, to be sent to other cellular phone users, referred to as "sexting" (Duranni, 2009). Sexting has created distraction for teens, parents, and schools as today's teens are pushing the boundaries of communication and relationships through the trading of inappropriate pictures and the sharing of suggestive photos via instant messaging. Posted or shared images can contribute to teen victimization, exploitation, and/or make teens susceptibility to cyberbullying. While the sharing of inappropriate pictures has been around since the invention of the camera, cellular phones have magnified the sexting trend as photos can be quickly shared with hundreds via messaging and/or through the uploading of photos to social networking sites (Trim, 2010).

According to Lenhart at the Pew Internet Research Center (2009), 4% of teens ages 12-17 have sent sexually suggestive, nude, or nearly nude images from texting while

15% have received suggestive and/or nude photos. Although the statistics do not compare to the over 66% of teen-texters in the market, it does indicate teens are active in using cellular phones for dangerous, if not illegal behaviors. Sexting occurs equally among boys and girls, by teens in relationships, by teens looking for a relationship, and/or when images are shared with others outside of any relationship (Lenhart, 2009).

While a majority of sexting occurs outside the school environment during online evening sessions, what happens in cyberspace does not stay in cyberspace (Richmond, 2010). Cellular phones turned on during lunch time can quickly lend to a flurry of reactions and distractions by teens receiving negative and/or sexting messages from the morning or night before. Teachers and school administrators report dealing with disruptive issues in the school environment that took place outside the school setting (Trim, 2010). Consequently, current debate in some school districts have proclaimed off-campus cellular phone behaviors violations to the school's student handbook policy and open to disciplinary action by the school.

In a review of issues related to personal electronic communications, Kemerer (2011) noted some instances of off-campus behaviors are not protected under First Amendment rights including threats of violence against faculty or students, and messages and images advocating drug use at school or school-related activities. For schools to apply disciplinary action to off-campus violations of personal electronic devices, the school must establish a linkage between the students misuse of the device and legitimate interests of the school. While law enforcement practices are evolving to deal with issues related to sexting, penalties vary from state to state and range from education counseling programs to charges of felony sexual abuse of a minor (Lenhart, 2009).



Cheating has been another reason schools are apprehensive about endorsing the use of cellular phones throughout the school day. Schools and educators have been dealing with cheating for generations and it can be said the problem is as old as test-taking (Barrett, 2010). While true, and similar to bullying and sexting, cheating has been magnified by the global-connectivity and instantaneous transfer capabilities of cellular phones. More than 35% of teens with cellular phones admit to cheating at least once, while 65% say others in their school cheat with them (Commonsense Media, 2009).

Digital cheating goes beyond text messages as users photograph tests to share with friends, texting of answers during exams, storing of information for later access, or the utilization of the Internet to locate resources or answers during an exam (McGrory, 2010). Ironically, many students do not see cheating behaviors as a big deal. Vennoch (2007) described the generational behavior of cheating as a difference in peer worldview. For example, in the baby-boom generation, stealing a tape from the neighborhood store would have been unethical. However, *i*-Gen users may not think twice of downloading and sharing music without purchasing the rights to download the music (Milliron & Sandoe, 2008).

Cellular phone status among peers has created unhealthy pressures for teens and produced addictive behaviors contributing to mental health concerns. Stress has also been reported as a major health concern by teens and adults related to cellular phone use and social networking. Some critics report obsessed teens are not getting enough sleep as they are sleeping with their phones and staying up late at night texting (McCann, 2008). In a report by the American Academy of Sleep Medicine, "Teenagers who excessively use their cell phone are more prone to disrupted sleep, restlessness, stress and fatigue" (cited



in McCann, 2008, p. 1). Cellular phones have also been cited as being responsible for brain tumors, migraines, and lowering sperm count due to radio frequencies. However, hundreds of studies have inconclusive evidence to support these accusations (Cell Phone Safety, 2011).

Companies such as the National School Safety and Security Services and many law enforcement officials, have discouraged school leaders from revising current policies so campus would be open to use of cellular phones anytime anywhere by students because of the distractions resulting from cell phone use, along with increased security concerns (National School Safety and Security Services, 2007). According to the National School Safety and Security Services:

Some schools banned pagers and cell phones starting a decade ago because of their connection to drug and gang activity, as well as due to the disruption to classes. The focus on their disruption of the educational process has come into conflict with cell phones becoming a convenience item over recent years. However, parents have increasingly lobbied boards to change policies primarily based on the argument that phones will make students and schools safer in light of national tragedies. (p. 3)

According to the National School Safety and Security Services (2007), cellular phones have been linked to the calling in of bomb threats untraceable by the school system. A tragic concern has been the potential for cellular phone line overload generated during an emergency if students rush to make phone call as this would render emergency response team's cellular phone systems useless (National School Safety and Security Services, 2007). Although 24/7 may feel good to parents and teens, it could interrupt security procedures when they are needed most.

## School Cellular Phone Disruptions and the Courts

Family and school dynamics are shifting as *i*-Gen students become digital mentors and teachers and parents become students (Trilling & Fadel, 2009). Over the past decade, numerous cases have been filed in United States courts regarding school cellular phone policies, appropriate search and seizures procedures, and student constitutional rights pertaining to cellular phone use (Kemerer, 2011). Each case walks the line between a school's defined cellular phone policy and a student's constitutional rights, most specifically the First Amendment rights for Freedom of Speech and the Fourth Amendment of Search and Seizure (PBP Executive Reports, 2009).

In the case of *Foster v. Raspberry*, (2009), courts upheld a student's Fourth Amendment rights to withhold a device used during the school day when school personnel requested a strip search to locate the device. In *Klump vs. Nazareth Area School Dist.*, (2006), even though the student violated the school's cellular phone policy for texting during the school day, courts found school administrators guilty of violating his Fourth Amendment rights as they had no justification to read the contents of all of his text messages. Schools have also faced challenges when violators claim First Amendment freedom to express themselves; such as in the case of *Miller v. Skumanick*, (2009) where photos of a 13-year-old girl in an opaque swimming suit were shared with teens. Regardless, the courts ruled in favor of the girl as the photos did not violate obscenity laws (PBP Executive Reports, 2009).

There are also cases supporting school districts when student cellular phone use has interfered with the school environment. In the case of *S.B. v. Saint James School*, (2006), the Supreme Court of Alabama found against four ninth-grade girls who sent

naked photos of themselves to classmates stating it was of legitimate public concern. Also, in *Requa v. Kent School Dist.* (2007), the courts found in favor of the school district when students took video of an unsuspecting teacher and posted demeaning, derogatory, and sexually suggestive video on YouTube. The courts upheld the student's right to criticize the teacher, but not at the expense of maintaining a positive learning environment (PBP Executive Reports, 2009). Evidently, schools must evaluate and define policies, expectations and administrative procedures related to cellular phone use and violations to avoid violations themselves.

#### Schools Revisit Cellular Phone Policies

The debate over guidelines for technology and its appropriate use has been a topic of discussion by school districts since the Telecommunications Act of 1996 (Federal Communication Commission, 2004) when schools obtained access to state of the art technology and discounted access to the Internet. The Children's Internet Protection Act of 2000 (Universal Service Administrative Company, 2008) also required schools to define Acceptable Use Policies (AUP) to articulate technology expectations and provide safety education for students using computers and the Internet in the school environment. As promoted by iSafe America Inc., (2010),

An AUP is a written agreement, signed by students, their parents, and teachers, outlining the terms and conditions of Internet use. It specifically sets out acceptable uses, rules of on-line behavior, and access privileges. Also covered are penalties for violations of the policy, including security violations and vandalism of the system. Anyone using a school's Internet connection should be required to sign an AUP, and know that it will be kept on file as a legal, binding document. (p. 1)

Many schools and educators perceive cellular phones to be an annoyance and nuisance to the school environment while others view them as safety and health threats



(Associated Content, 2010). The two questions school districts face has been whether to tighten cellular phone policies to eliminate interference with the school's mission to educate, or to accept the trend in teen cellular phone use and relax school cellular phone policies as to guard student's constitutional rights and to recognize the opportunities these tools bring to the learning environment.

School districts have raised the question, "How far should we go with limiting cellular phone use in school?" According to the court case, *Price v. New York City Board of Education (2008)*, as cited in the PBP Executive Reports (2009), it is ok for schools to limit phones or even ban them.

The court upheld the ban, finding the DOE's 'pedagogical mission would be undermined by the time spent confronting and disciplining students' if phones were allowed. It also said parents didn't have a fundamental right to talk to their children on cell phones. The parents appealed, but the appellate court strongly affirmed the judgment. It said the DOE had the legal authority to ban cell phones in schools—and a ban was 'necessary because a ban on use is not easily enforced.'

Some school districts across the nation have made concessions as to where students can carry and use cellular phones, but only during designated times and for specific activities. One example is the Richfield School District in Minnesota:

Cellular phones, iPods, MP3 players, PDAs, and other devices capable of transmitting data or images shall be turned off and kept out of sight during class time unless use is designated by the classroom teacher. Students may use cell phones, iPods, MP3 players, and PDAs appropriately and respectfully during passing time, the student lunch period and before and after school. (Richfield School District, 2011 p. 9)

Another example of a school's compromise on cellular phone policy is the Wiregrass Ranch High School in Wesley Chapel, Florida, where the District uses the term 'relaxed cellular phone policy' to define its cellular phone procedures: "Wiregrass encourages teachers to allow students to use their phones



in classes for educational purposes. Teens routinely use their phones to shoot pictures for projects, calculate math problems, check their teachers' blogs and even take lecture notes (Solocheck, 2009, p. 1).

In many school districts, penalties for cellular phone use at school include warnings, parent pick up, confiscation of cellular phones, after school detention, or suspension (PBP Executive Reports, 2004). Some states, such as Louisiana, enforce even steeper consequences with parents and/or students having to pick up confiscated cell phones on Saturday. Although research indicates many middle level schools have only minimal expectations and consequences for teen cellular phone and violations (Bismarck Public School District, 2011; Minot Public School District 1, 2011; West Fargo Public Schools, 2010), schools continue to contemplate on how to deal with more serious violations of cell phone use such as cyberbullying and sexting occurring on- and off-campus.

As schools struggle with distractions such as cyberbullying, cheating, and sexting, 46 states have passed anti-bullying laws (Bullying Police USA, 2011). Even so, disruptive behaviors occurring outside of school make it difficult for schools to police behaviors due to minimal jurisdiction (Johnson, 2010). Although schools typically rely on acceptable use policies, harassment guidelines and other defined school rules to deal with cellular phone violations, schools should utilize the expertise of school resource officers or other members of law enforcement to thoroughly investigate cellular phone incidents (Hinduja & Patchin, 2011).

A comprehensive approach to character development and abuse prevention has been overlooked by most schools (Richmond, 2010). For instance, anti-cyberbullying

posters should be displayed throughout the school. Older responsible students can be requested to serve as mentors to their younger peers on the importance of using technology in ethically-sound ways. Additionally, schools should review state anti-bullying policies and prevention programs to guide them to design policies to deal with local violations. Parameters for investigations into cellular phone violations should be based on each particular incident, school policy, state law, freedom of speech, and search and seizure procedures. In summary, a positive school climate plays an important role in reducing negative peer interactions and increasing student achievement (Hinduja & Patchin, 2011).

#### Cellular Phones in Education

In a national poll by Common Sense Media (2009), 66% of students ignored the requirement to turn cells phone off, 63% had phones in school where banned, and 57% kept phones with them instead of stored. The wide-spread use of technology outside the school walls morphs its way in as it becomes an extension of users' brains and a part of the users' everyday lives (Johnson, 2010). Further, a human being needs to communicate and share information regardless of the form or tool. Schools acknowledge tools change over time (Fisher & Frey, 2010). As a result, schools may need to reevaluate opportunities and potential for cellular phones to supplement instruction and enhance student learning.

According to the International Society for Technology Education (ISTE) (2007), higher-order thinking skills and digital citizenship are critical skills for 21st century students to learn effectively for a lifetime and to live productively in our emerging global society. ISTE has identified six performance indicators for students: creativity and

innovation, communication and collaboration, research and information fluency, critical thinking, problem-solving and decision-making, digital citizenship and technology operations and concepts. Schools will need to provide instruction in which students can develop these skills through real-world activities and with today's technological devices.

A question was raised in a report from Project Tomorrow Speak Up (2011), "How can mobile learning enable, engage and empower today's students as learners?" (p. 5). Lemke (2010) stated, "The responsibility of educators is to ensure that today's students are ready to live, learn, work and thrive in this high-tech, global, highly participatory world" (p. 244). However, good instructional technology does not place emphasis solely on the technology, but on the process (Papert, 1989; Saettler, 2004). Common teaching practices such as lectures, assigned readings, study guides, learning games, and expository papers will still serve as the foundation for learning even with cellular phone integration (Rosen, 2010). "Like the chalkboards of our school days, the best technologies fade into the background" and they "weave themselves into the fabric of everyday life until they are indistinguishable from it" (Fisher & Frey, 2010, p. 223).

The cellular phone has changed the way families interact and communicate, which is also having an impact on how teens relate to school and learning (Coates, 2007). As a result, administrators are feeling the pressure to use this device to educate, thus lessening the effectiveness of any school-wide ban on cellular phones (Johnson, 2010). In order to meet external demands from parents, innovative educators are seeking creative ways to capitalize on cellular phone technology while turning this distractive tool into an effective learning device. Additionally, school administrators will need to find a balance



in dealing with the reality of teen cellular phone ownership and realistic policing of its use.

The reality of cellular phones coupled with Web 2.0 resources are just one example of how savvy teachers are using this portable device purposefully in the classroom. Kolb (2010) described the use of Gabcast, Gcast, and Hipcast to capture audio and video segments by cellular phone to post to the Internet for classroom projects. Cellular phone calling and texting features can also be used with free web sites such as FreeConferencePro and Jott to generate telephone conferences and create speech-to-text e-mails. Aligned with classrooms curriculums, resources such as these can be used on field trips, for interviews, on-the-go data collection, and assessment of learning.

Johnson (2010) provided examples of cellular phone lesson integration to enhance lectures through the recording of segments of the lectures, polling of student responses or for note-taking. Assigned readings would be completed using e-books and online curriculums to be accessed anytime anywhere. Students could also use audio and video features for expository learning research and digital history projects as they collect research on site. While curriculum standards and expected outcomes will serve as the foundation for classroom instruction, creative use of cellular phone technology will enhance lessons and engage learners. Through this process, students will become empowered to take ownership of their learning.

Schools have the legal right to ban cellular phones on school campuses; nevertheless student non-compliance may compromise the school's policy effectiveness, contributing to even more distractions. The cellular phone prohibition is a disservice to today's students and educators (Fisher & Frey, 2010). Prohibition resulted in illegal



behaviors, yet ultimately was redefined for legal use. Consequently, administrators will need to consider a relaxed cellular phone policy and open campus use of cellular phones, along with sound investments in school technology resources and support for teacher training to benefit learners (Richardson, 2010).

Vision and leadership are also required to recognize and tap into the technology tool predicted to transform how we educate today's learners and tomorrow's workers. Marzano (2003) stated, "Leadership is a necessary condition for effective reform relative to school-level, teacher-level and student-level factors" (p. 172). Educational leadership must be about vision, shaping ideas and constructively adapting to change (Hargreaves, 2010). Organizations such as the National Association of Secondary School Principals and American Association for School Administrators have focused their efforts to design and deliver technology leadership by providing administrators with relevant professional development training and leadership training around technology (Ullman, 2011). Professional development will provide teachers with the knowledge and skills to understand and utilize technology with ease (Rudnesky, 2006). According to Johnson (2010), "Savvy teachers will figure out how to change student distraction to student focus by using students' personal technologies to improve learning and teaching" (p. 22).

For effective use of cellular phones in the classroom, Kolb (2010) suggested teachers regulate when students bring cellular phones to the classroom by establishing when and where students store cellular phone before entering the classroom when not in use for learning. "Social contracts can be developed as an agreement to define classrooms expectations for how, when, why, and where cell phones will be used in the classroom" (Kolb, 2008, p. 13). The process of developing these agreements presents teachers with

the opportunity to talk with teens about cellular phone etiquette, ramifications for violations, and unwanted distractions such as cyberbullying, cheating, and sexting.

Finally, in a report by Project Tomorrow (2011), *The New 3 E's of Education: Enabled, Engaged, Empowered*, can serve as a framework or vision for how schools evaluate whether to embrace cellular phones as friend or foe, toy, or tool. Based on research from Project Tomorrow (2011), in order to be effective in the future schools must embrace the following trends:

Trend 1: Educational experiences that are enabled by mobile devices and applications provide a multitude of un-tethered opportunities for students to be more engaged in learning and extend the learning process beyond the classroom.

Trend 2: Online and blended learning enables a greater personalization of the learning process and facilitates opportunities for students to collaborate with peers and experts, thus empowering students with a new sense of personal ownership in the learning process.

Trend 3: The use of e-textbooks and other digitally rich content engages students by providing a real world context for the learning process and allowing learning to extend beyond the classroom walls.

Chapter III presents the methods and design of the research. Chapter III includes a description of the population, the survey instrument, and how the data were collected.

## CHAPTER III

### RESEARCH METHODS

#### Introduction

Chapter III describes the methods and design layout of the research. Background information regarding the setting, participants, and sample size are explained, along with descriptions of the research methodology, survey instrument, procedures, and data analysis. Chapter III concludes with a brief summary of the structure of Chapter IV.

#### Research Methodology

Limited research was found for the study on teen cellular phone use and communication; thus a mixed methods approach of qualitative and quantitative research methodologies were utilized to organize focus groups, design a survey instrument, and implement procedures to collect data for the study. The following research questions were used to guide this study:

1. What is the current level of cellular phone ownership and usage by middle level teens in a Midwest suburban community?
2. What opportunities or distractions are generated through cellular phone use?
3. What are teen perceptions of how they use cellular phones to communicate in their everyday lives?
4. How does teen cellular phone use affect the school environment?



## Design

Results of the literature review uncovered several factors relating to cellular phones: ownership, usage, opportunities, distractions, and policies. Constructs were used as the framework for categorizing instrument survey questions. Cellular phone *ownership* variables included: gender, age, school, grade, ethnicity, related technologies, land-line owner, cellular phone owner, non-cellular phone owner, parent purchased cellular phone without teen request, teen requested cellular phone purchase from parents. *Usage* variables included: purchase intent, daily phone calls, daily text messages, and cellular phone features used. *Opportunities* variables included: safety, learning tool, communication device, Internet resource, and social networking. *Distractions* variables included: texting, cheating, sexting, cyberbullying, hours of use, social networking dependencies, and health. Finally, the *policies* construct was defined by the following variables: understanding of current school cellular policies and procedures, support for school cellular phone policies, reported cell phone violations, non-reported cell phone violations, and recommended consequences for violations. Data was examined to identify perceptions of middle school teens on cellular phone usage and communication.

Qualitative data was collected via three focus groups and open-ended questions on the instrument survey. Quantitative data was collected using an electronic survey instrument designed using SurveyMonkey and disseminated through the Midwest school district's Central Middle School website. Data collection was completed in May 2011.

## Population Studied

In May 2011, one Midwest Suburban School District (MSSD) was reported as a Pre-K through Grade 12 public school system consisting of one preschool, two



kindergarten centers, seven elementary schools, one middle school, one traditional high school, and one alternative high school. This particular MSSD was the fastest growing school district in its state at the time of this report, averaging over 8,000 students enrolled in 2010-2011 and with projected enrollments of 9,000 by 2015 (North Dakota Department of Public Instruction, 2010). It was located in a metropolitan area of interconnecting cities with a population of around 175,000 people (U.S. Census Bureau, 2010). This MSSD was situated in the smallest of the cities in the metropolitan area, which for the purpose of this study will be referred to as Midwestville.

The city of Midwestville was founded in the mid-1940s. The growing area was predominantly an agricultural community supported by large farm distribution centers, manufacturers, meat processing companies, along with the cattle stockyards. Over time, there had been a shift from agriculturally-based commerce to business-centered enterprise. At the time of this report, Midwestville was the fastest growing community in the state, boasting a population of just under 26,000 (U.S. Census Bureau, 2010).

The growth of Midwestville has affected the MSSD in this study through increased school enrollments and a rise in diverse populations. The MSSD in this study contained one middle school comprised of students in Grades 6, 7, and 8, which for the purpose of this study will be referred to as Central Middle School (CMS). Growth in Midwestville had transformed the demographics of the CMS student body from a predominantly white middle class population in 2000 to a 2011 population comprised of: 8% African American, 6% Hispanic, and 3% Native American, with over 27% of the students meeting low socioeconomic status in 2011 (taken from CMS enrollment records). Changes in the community, increased enrollments, and shifting student

demographics will require MSSD to better understand the behaviors and needs of its student body.

### Sample

Research revealed teens, ages 12-17, were the largest growing segment of cellular phone users in the nation (Pew Internet Research Center for the People and the Press, 2010). Consequently, participants were drawn from Grades 6, 7, and 8 from a growing Midwest suburban community. The sample consisted of the following groups:

1. Students by grade level (Grades = 6, 7, and 8) attending the Midwest Suburban School District's Central Middle School as of May 2011 ( $N = 1394$ ). Students were identified through the school's database system.
2. Students by grade level (Grades = 6, 7, and 8) enrolled in a technology-based program ( $N = 243$ ) in the same Midwest Suburban School District.

### Criteria for Selection of Sample

Changes in Midwestville have created a thriving business climate for technology, banking, retail, industry, and entertainment venues. The positive economic changes in Midwestville, the business community, demographics, technology infrastructures, along with new modalities for teaching diverse learners at the Central Middle School have influenced the way teens communicate. Thus, the sample selection for this study was appropriate for MSSD to investigate this phenomenon.

### Survey Instruments

The lack of a suitable instrument in the literature required the researcher to design a survey instrument and questions specifically for conducting the study. Surveys that influenced the design of this survey instrument and questions included: Pew Internet

Research Center (2007-2010), Speak Up 2009 (Project Tomorrow, 2009), A Generation Unplugged (HarrisInteractive, 2008), and Common Sense Media (2010). Two survey instruments were developed for the study: (a) an open-ended questionnaire was used to gather qualitative data from focus groups, and (b) a closed and open-ended survey was designed to gather quantitative and qualitative data from all the participants.

### Procedures

Focus groups were identified as the method to gather qualitative data for the study. “A Toolkit for Conducting Focus Groups” (OMNI Institute, 2004) was used as a framework for focus group procedures. Fourteen opened-ended questions were constructed for the focus group survey instrument. A pilot test of the instrument was completed to confirm reliability of the questions and face validity of the survey after comparing student responses. The final focus group survey instrument (Appendix A) was utilized as a guide for all focus groups.

Three focus groups, representing Grades 6, 7, and 8, were used to collect data from the population to be studied. Students in this sample were representative of the same age and grade levels as the population targeted for the study, yet were located in a separate building than the population. A method of stratified random sampling was used to select 8 to 10 participants, of varying demographics, for each grade level to participate in the study’s focus groups. The 25 participants were representative of demographic subcategories for the CMS population to be studied. A non-biased college intern served as moderator to facilitate one hour sessions for each group on May 6, 2011. During the data collection process, focus group participants were coded for anonymity, yet to establish identity to compare recordings and notes for data analysis. A schematic was



used to code participants. A number represented participants' grade level, and a letter differentiated between individual participants. For example: 6A, 6B, 6C identified individuals in Grade 6; 7A, 7B, 7C identified individuals in Grade 7; and 8A, 8B, 8C identified individuals in Grade 8. Following the focus group discussion, convenience sampling was used to pilot the Teen Cellular Phone Survey (TCS) electronic survey instrument and questions. Focus group feedback was used to check for survey question clarity, vocabulary, and as a cross-check of reliability toward the final electronic survey instrument to be used in the quantitative data collection process.

The electronic survey instrument was comprised of an opening page with information about the survey including: purpose for the study, population to be studied, directions, length, and a waiver of consent explaining anonymity of the results. After the electronic survey was completed in its on-line format, another pilot test was completed by the Central Middle School's technology department, administration, and school personnel to check for question clarity, vocabulary, spelling, format logic, and reliability of the electronic instrument in its final format. SurveyMonkey, an online database engine, was used as the medium for collection. Using SurveyMonkey software, the survey was designed for online collection of data and questions were manually entered. Participants were required to respond to all questions. A question loop was established to restrict non-cellular phone users from answering questions only for cellular owners. Following the final pilot test, the electronic *Teen Cellular Phone Survey* (TCS) survey instrument was approved for use (Appendix B).

The study's two survey instruments were made available to the following participants:

1. The focus group instrument was utilized during focus group sessions held May 6, 2011, at the Central Middle School's technology-based program. Twenty-five students participated in three focus groups, Grade 6 ( $N = 9$ ), Grade 7 ( $N = 8$ ), and Grade 8 ( $N = 8$ ).
2. The electronic TCS survey instrument was made available to teens in Grades 6, 7, and 8, teens present in school the day the survey was given in May, 2011, via the Central Middle School's web site.
3. The electronic TCS survey instrument was made available to middle level teens enrolled in the technology-based program, Grades 6, 7, and 8, present in school on the day the survey was given in May, 2011, via the Central Middle School's web site.

The electronic TCS survey instrument was used for individual student collection of the data. CMS teens were informed of the survey during the spring MAP (Measures of Academic Progress) assessment. A convenience sample created the best opportunity for students to access technology needed for the participants to access the online survey and generated the most efficient method for students to participate. A verbal explanation of the survey, its purpose, and how to access the survey was given to participants by the CMS technology specialist. A written explanation and overview of the survey, purpose, length, number of questions, and waiver of consent were given at the beginning of the survey. The survey was distributed to students using Central Middle School's web site from May 13, 2011, to May 27, 2011.

Procedural Synopsis of events:

1. Approval by the Midwest Suburban School District (Appendix C) and Central Middle School (Appendix D) to collect data for research.
2. Approval obtained from the Institutional Review Board at the University of North Dakota in May 2011. A waiver of consent was approved for the study.
3. Development of focus group questions based on literature review findings.
4. Organization of focus group methodologies.
5. Coordination of focus group moderator, recorder, note-taker and participants.
6. Execution of focus group (Grade levels = 6, 7, and 8) on May 6, 2011.
7. Focus group pilot test of the TCS survey and questions in hard copy format. Documentation was compiled and question recommendations were employed.
8. Second pilot test of the TCS survey in hard copy format completed by CMS instructional technology department. Corrections were made to questions. Five additional questions were derived and added.
9. Third pilot of the TCS survey and questions in hard copy format completed by CMS instructional technology department to confirm reliability of questions.
10. Final pilot test of the TCS survey and questions in hard copy format completed using a sampling of the CMS school personnel to check for reliability and face validity.
11. TCS survey was validated.



12. Design and construction of the electronic TCS survey using SurveyMonkey.
13. Pilot testing of the online TCS survey using a sampling of CMS administration, teachers and technology staff. Confirmed face validity and reliability of the online survey.
14. Coordination with the CMS technology department to execute the TCS survey during spring MAP testing activities.
15. Notification to CMS staff of the TCS survey through the school's intranet e-mail system and school announcements.
16. Notification of the TCS survey and purpose to all CMS students during the school's daily announcements, MAP testing activities, and through survey instructions.
17. Implementation of the TCS survey to the CMS students between May 13 and May 27, 2011.

#### Data Analysis

The data were collected and analyzed to determine the current level of cellular phone ownership and the level of usage by teens in the Midwest Suburban School District's Central Middle School. Data were examined to evaluate the perceptions of middle level teen's cellular phone ownership and usage by gender, grade, and ethnicity. Data were collected and tabulated to reflect how they were using cellular phones to communicate. Results were examined so as to determine whether use of cellular phones contributes to opportunities or generates distractions for students in a school environment.

Analysis of qualitative data was completed through an iterative process, wherein the information was cycled through at least three times. In evaluating the focus group's qualitative data, respondent's comments were indexed by key words. Indexed words were organized and identified as "themes" and given definitions to produce consistency when data were categorized. Once more, respondents' comments were reviewed to ensure responses were placed in the correct thematic category. Within each theme, focus group respondents frequently voiced detailed statements to further explain their ideas. These detailed comments were categorized as "elements" and were used to classify specific respondent's comments with respect to the overarching themes. Due to the nature of some focus group questions and unique comments by the respondents, some focus group data were reported in a descriptive format to better capture respondents' attitudes. Emotional reactions inferred by the researcher in listening to the digital recordings or documented by the note-taker were noted in descriptive data, but were not included in the tables used to present qualitative focus group data in Chapter IV.

Quantitative data were downloaded from the electronic survey from Survey Monkey. SPSS Version 18 was used to import quantitative data from an Excel data sheet. Variable labels and values were assigned to complete cross-tabulation, frequency analysis and ANOVA comparisons of the data by gender, grade, and ethnicity.

Chapter IV reports the main findings pertaining to the research questions presented in Chapters I and III and data collection from the study.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF FINDINGS

#### Focus Group Demographics

Three focus groups were convened on May 6, 2011, at the Midwest suburban middle level technology-based program of the school participating in this study to begin the data collection process. One focus group included Grade 6 students only; Grade 7 students participated in the second group; and the third group was made up only of Grade 8 students. So each focus group did not contain a crossover of grade levels. Twenty-five students participated in the focus groups: Grade 6 ( $N = 9$ ), Grade 7 ( $N = 8$ ), and Grade 8 ( $N = 8$ ). Students were asked 14 open-ended questions related to the research questions posed in Chapter I (Appendix A). The researcher illustrated in Table 1 the framework used to report all qualitative data, themes, and elements for the study, including focus group data and open-ended question data from the *Teen Cellular Phone Survey*.

For Question 2, focus group students were asked, “What percent of your friends own a cellular phone?” All grades indicated a majority (80% to 100%) of their friends owned cellular phones. Even focus group students who reported not owning a cellular phone indicated a majority of their friends owned one. Interestingly, focus group perceptions of teen cellular phone ownership were higher than the actual ownership students themselves reported, shown in Table 1 (67% to 75%). Findings suggest cellular phones are the norm and convey a level of social status for teens. This was evident in



focus groups when students who did not own cell phones admitted they did not use cell phones, and peers laughed, snickered, or transmitted a shocking facial expression.

Table 1. Do All of You Own a Cellular Phone? Why or Why Not?

Category	Themes (N = 25)	Definition/Description of Themes	Elements
Ownership	Focus Group Cell Ownership by Grade	A code of "Ownership" was assigned to data when a participant made statements regarding either the rules for owning electronic equipment or expressed a wish to own or possess a certain medium. The coding was employed whether the "ownership" statement was related to the question addressing it or not.	Percent of ownership by grade: Grade=6, (N=9, 67%) Grade=7, (N=8, 75%) Grade=8, (N=8, 75%)
Yes	Owner Communication	Statements were coded as "Owner Communication" when participants stated behaviors or actions that described how they were using the phone to interact with another party. The coding was employed whether the "communication" statement was related to the question addressing it or not.	Planning for after school activities Translator for grandparents Discontinued daycare Bus emergencies Coordinate schedules No house phone
Yes	Owner Safety	Statements were coded as "Owner Safety" when participants referred to a specific need to own or use a cellular phone for security or to obtain assistance. The coding was employed whether the "safety" statement was related to the question addressing it or not.	Home alone Bigger school New school Communicate with family Get help Emergencies

Table 1. Continued.

Category	Themes ( <i>N</i> = 25)	Definition/Description of Themes	Elements
No	Parent Choice	Statements were coded as “Parent Choice” when participants made comments that indicated adults were making decisions to halt cellular phone ownership. The coding was employed whether the “parent choice” statement was related to the question addressing it or not.	Student responsibility Cost Concerns with bullying, games and music There are phones everywhere You don’t need one, too young
No	Student Choice	Statements were coded as “Student Choice” when participants indicated that they were making the decisions not to own a cellular phone. The coding was employed whether the “student choice” statement was related to the question addressing it or not.	I don’t want one Too many problems

In Question 4 of the focus group survey, the focus group moderator asked students, “What cellular phones features do you use (texting, video, Internet, alarm, etc.)?” Texting was the number one response across all grades, followed by calling. Students in Grade 6 reported basic use such as texting, calling, games, pictures, and one Internet response. However, older students voiced more sophisticated cellular phone uses, such as: Grade 7 students reported using alarms, the Internet, Facebook, weather web sites, ringtones and pictures; and Grade 8 reported basic features plus calculators, e-mail, videos, Internet, and the use of their phone for music like an iPod (see Table 2).

Table 2. What Are the Main Reasons You Like Owning a Cellular Phone?

Themes	Definition/Description of Themes	Elements
Communication Reason	Statements were coded as “Communication Reason” when participants stated behaviors or actions that described how they were using the phone to interact with another party. The coding was employed whether the “communication” statement was related to the question addressing it or not.	Texting was stated first before calling Calling Connecting with family out of state. Connecting with family out of the country. Stay in touch with friends Call friends about homework Call mom about school
Safety Reason	Statements were coded as “Safety Reason” when participants stated a specific need to own or use a cellular phone for security or to obtain assistance. The coding was employed whether the “safety” statement was related to the question addressing it or not.	Protects me Bigger city In case of an emergency It makes me feel safe when I can stay in touch with friends. Get help
Entertainment Reason	Statements were coded as “Entertainment Reason” when participants described their cellular phone use for leisure. The coding was employed whether the “entertainment” statement was related to the question addressing it or not.	Use when bored and not busy Games Music Pictures Internet
Features	Statements were coded as “Features” when participants described how they used specific cellular phone functions. The coding was employed whether the “features” statement was related to the question addressing it or not.	Easy to get a hold of people Ringtones Alarm clock to wake me up Texting, quality of phone makes a difference

For Question 5, students were asked, “What features do you like the best and how do you use them?” Students reported: texting friends; texting because you can contact multiple people at once; texting because it is easy to get a hold of people and doesn’t disrupt; calling because texting is too much money; calling because it makes me feel safe,



and I use it when I am having anxiety attacks; to listen to ringtones and play games when I am bored; playing games to pass the time while waiting; to use the Internet to search for information on the spot and for homework; Internet to check Facebook and e-mail; Internet for applications, YouTube, and Google Images.

In Question 6 of the focus group survey, two questions were posed regarding parental rules and monitoring of teen cellular phones. “Rules” were defined as specific expectations prescribed by parents to govern the conduct of teens with respect to cellular phone use. “Monitoring” was defined as regular observations to gather information or provide feedback to teens with respect to cellular phone use. Themes emerging from this discussion included curfews, feature limitations, responsible use, etiquette and the sharing of a cellular phone. In Table 3, focus group responses are outlined for all grades.

Table 3. Parent Rules and Monitoring of Cellular Phone.

Category	Themes	Definition/Description of Themes	Elements
Rules	Curfew	Statements were coded as “Curfew” when participants described parameters for their hours of use.	Cannot use after 10 pm
	Feature Limitations	Declarations were coded as “Feature Limitations” when participants described restrictions for using specific cellular phone features.	No downloading of games No text features, too expensive Do not go over calling limits Must follow plan limits Internet blocked Games only
	Responsible Use	Statements were categorized as “Responsible Use” when participants commented to behaviors and control required owning a cellular phone.	Cannot send mean messages to other kids. Use common sense when using. Do not lose it. Do not be inappropriate

Table 3. Continued.

Category	Themes	Definition/Description of Themes	Elements
Rules	Etiquette	Comments were categorized as “Etiquette” when participants described when, where or how they were to use a cellular phone around others.	No texting when talking to people. I have to pay attention and not text constantly.
	Sharing another user’s cellular phone	Statements were categorized as “Sharing” when participants commented to rules when using other person’s cellular phone.	When borrowing a cellular phone, call instead of text so that parents know who it is.
Monitoring	Review of Billing Statement	Declarations were categorized as “Review of Billing Statement” when participants stated that parents monitored their use by observing the monthly billing statement.	Parent checks bills for minutes Parents check messages, but student is now locking phone. Phone is taken after 7,000 text messages a month
	Intervals	Statements were categorized as “Intervals” when participants described how often their parent checked their phone or billing statement.	Check daily Check weekly Check monthly
	Appropriate Use	Declarations were categorized as “Appropriate Use” when participants stated that cellular phone content was reviewed for appropriateness.	Check text messages Check pictures

Questions 7 and 8 focused on how teens specifically used cellular phones to communicate with friends and how often they used their cellular phones throughout the school day for texting, talking, playing games, social networking, or other uses. Texting was the number one method teens selected as a preference for communicating with friends. Non-cellular phone owners obviously reported no texting time during the day, while cellular phone owners reported texting a minimum of five minutes a day up to

seven to eight hours in a day. A majority of students reported texting an average of two to three hours a day.

Most focus group students reported spending less time talking daily than texting. Across all grade levels, students reported using cellular phones for calling from five minutes to four hours a day. On average, students reported using their cellular phone one hour per day for calling. The importance of interpersonal communication by respondents was illustrated when respondents indicated; if a friend did not respond to a text, the user would then call. Only one respondent suggested they would like to hang out with their friend rather than text or call.

Most teens indicated they did not use their cellular phone to play games or for social networking. Some teens indicated 30 minutes to one hour a day playing games while waiting or riding the bus. Cellular phone use for social networking was used even less with only four teens indicating they used their cell phones for social networking 30 minutes to 1 hour a day. Other cellular phone uses reported by focus group members were 10 minutes to 3 hours per day listening to music, using the calculator for homework, or playing with features.

For Question 9, the moderator asked students, "In what way do you think cellular phones can be helpful to teenagers?" Communication and safety were the only themes emerging from this question. Focus group respondents across all grades stated cellular phones helped them when they were in after school activities and when they needed to call a parent for a ride. The participating teens suggested phones were important when teens were going to be late to let their parents know, to remind parents to pick them up, or for parents to contact teens if parents would be late. Some teens perceived cellular phones



to be helpful in building relationships with parents as teens were able to call or text parents (in other words, communicate) more often than if they did not have a phone. All focus group students noted cellular phones helped students in emergencies and was used for safety. Grade 6 students commented especially on how cellular phones helped them when they needed a ride, if they were lost, or if someone was hurt. Grade 7 and 8 teens referred to safety as contacting someone in case of an emergency or to stay in contact with family members.

For Question 10, focus group students were asked, “Do you have any ideas of how cellular phones can be used for learning?” Students’ responses were consistent across all grades and included comments such as: using the calculator/scientific calculator for math in class; using math games to practice math; using a dictionary to look up words; downloading applications for every subject; doing Internet research; texting or calling a friend about homework; applications like Kindle for reading; using Word or PowerPoint on new phones; and reading on-line books through the Internet.

Focus group students were asked in Question 11, “Do students use their cellular phones to cause harm to other students, how?” According to the field notes, all focus group students demonstrated a level of distress when discussing how cellular phones can harm students as they appeared nervous, lost eye contact, and began to fidget. Some students admitted to experiencing cyberbullying due to cellular phones. Themes emerging from student responses to Question 11 are provided in Table 4.

Table 4. Themes on How Cellular Phone Use Can Harm Other Students.

Themes	Definition/Description of Themes	Elements
Harassment	Statements were categorized as “Harassment” when participants described behaviors that were used to upset, torment or disturb others one to one.	Sending inappropriate messages to other students. Using swear words toward other students when texting or calling. Saying mean things to other students. Making intimidating comments.
Gossip	Statements were categorized as “Gossip” when participants described comments that were disturbing and shared amongst multiple users.	Backstabbing a person. Saying things about them you would not say to their face. Spreading rumors when texting. Once you send something, it’s out there.
Cyberbullying	Statements were categorized as “Cyberbullying” when participants described behaviors that were intentional, persistent, and threatening to target others using social media.	Trap or blame other people through false information. Threats over Internet posts. Saying rude stuff, text, talking, or social networking. Can send death threats, porn, or bad pictures. Rumors are spread faster.

In Question 12, focus group participants were asked, “How do students use cellular phones when at school?” In Table 5, student responses to this question were categorized and presented to compare responses across all grades.

Focus group students were asked in Question 13, “Do you think students follow the school’s cellular phone policy, why or why not?” Evidence from the data confirmed students violated the school’s cell phone policy, while others were allowed to violate the policy due to teacher permission. Table 6 outlines the theme and elements from student responses across all grade levels.

Table 5. How Students Use Cellular Phones at School.

Themes	Definition/Description of Themes	Elements
Calling/texting During the School Day	Statements were categorized as “Calling/Texting During the School Day” when participants made comments that described how cellular phones were used in the school environment during school hours. The coding was employed whether the statement was related to the question addressing it or not.	To call parents between blocks, at breaks or during lunch. Texting friends or students at other schools during the school day. Going to the bathroom to call parents if they are having a bad day or do not feel well. Texting parents during the school day about after school.
Cheating	Statements were categorized as “Cheating” when participants described behaviors used to break rules or take advantage of learning expectations. The coding was employed whether the statement was related to the question addressing it or not.	Using calculators, dictionary or Internet.
Entertainment School	Statements were coded as “Entertainment School” when participants described using their cellular phone for leisure during the school day. The coding was employed whether the statement was related to the question addressing it or not.	Playing games at lunch or in class. Listen to music.
Inappropriate Use	Statements were categorized as “Inappropriate Use” when participants described behaviors used to break rules or disrupt the learning environment. The coding was employed whether the statement was related to the question addressing it or not.	Sending bad pictures. Spreading rumors. Sending mean texts.
Learning	Statements were categorized as “Learning” when participants made statements how they use cellular phones to help with class assignments. The coding was employed whether the statement was related to the question addressing it or not.	Using cellular phones for class assignments.



Table 6. Responses to Whether or not Students Follow School's Cellular Phone Policy.

Themes	Definition/Description of Themes	Elements
Yes/No	Statements were categorized as "Yes/No when participants made statements that indicated that students understood the school's cellular phone policy but did not always follow the policy. The coding was employed whether the statement was related to the question addressing it or not.	<p>Most follow the policy, but disruptions do occur.</p> <p>Most use them when allowed, but some use them anytime.</p> <p>Kids always have phone. Some teachers don't care and don't say anything.</p> <p>Most kids follow the rules. Some get away with it, but no big deal.</p> <p>Depends on the teacher, lots of people text.</p> <p>Ask teacher for permission to use the cell phone.</p> <p>Some ask teachers [permission] most don't.</p> <p>[I'm] not sure of real policy. No texting while teacher is teaching.</p>
No	Statements were categorized as "No" when statements were made that indicated that students were unaware of the school's cellular phone policy or made intentional choices not to follow the policy. The coding was employed whether the statement was related to the question addressing it or not.	<p>Unaware of policy.</p> <p>Most have cell phones in pocket.</p> <p>Inappropriate pictures are sent.</p> <p>[Share cell items] Things are disgusting.</p> <p>Phones go off all the time in school.</p> <p>Nothing reinforced. People shouldn't text.</p> <p>I text friends. Friends' text under the table.</p> <p>Lots of kids break rules.</p> <p>[I'm] not supposed to carry, but always have it on me for safety.</p> <p>The policy is to have cell phone in their locker and most have them on and in their pocket.</p> <p>Teachers enable students to use it. [They] don't punish, so the policy isn't enforced.</p> <p>Can have it out but not text. [I] broke rule but never got caught. Most break rules.</p>
Yes	Statements were categorized as "Yes" when participants stated they understood the school's cellular phone policy and students at their school adhered to the policy. The coding was employed whether the statement was related to the question addressing it or not.	<p>[Our Technology-based] school rules are followed, [other middle school] kids get busted a lot.</p> <p>Supposed to be in lockers.</p>

The final focus group question examined teen perceptions or ideas about what would contribute to a viable cellular phone policy for schools. Students were asked, "If you were given the task to create NEW cellular phone rules for [the Midwest Suburban

School District], what would they be?” One significant theme emerged across all grades, 20 of 25 participants (80%) made statements proposing that cellular phones should be allowed to be carried in school. Analysis also suggests participant beliefs may be biased by current parent cellular phone rules, the school’s policy, and their personal experiences with teachers allowing permission to use cell phones, as student suggested new guidelines were characteristic of current Central Middle School policy.

Participants in Grade 6 were the most conservative in their comments regarding a NEW school cellular phone policy. Two participants stated cellular phones should not be allowed in school without parent permission and should only be allowed in the student’s locker. The remaining sixth-grade focus group participants suggested cellular phones should be allowed in school and classrooms; however, all defined a parameter to control or restrict behaviors, such as:

- [We] should only be able to use or carry our cellular phones for emergencies.
- [Students] must use cellular phones appropriately, with no cyberbullying.
- There should be no inappropriate image or text to make people throw up.
- [We] should be able to use cellular phones at lunch without sound, in between classes, and okayed by teacher and parent.
- [I think] we can use our phones in class but we must obtain permission from the teacher and nothing inappropriate or they should be confiscated.
- [I think] cellular phones can only be used to contact family.
- [I] think the phone can be on but sound must be turned off.

Students in Grade 7 implied a new cellular phone policy should permit students to carry their cellular phones at school. A theme of “permitted use” was evident, as 50% referred to how and when students should be allowed to text during the school day. “Purpose” and “teacher permission” were also themes with students stating cellular phones should be used for emergencies and education, but only when given permission by the teacher. One participant noted, “Teachers could check cellular phones at any time.” Two students indicated indifference toward a new policy as one “didn’t know” and the other indicated, “[there] is no way to have a rule because it will get broken.”

Grade 8 participant comments to the creation of a NEW cellular phone policy were based on “self-fulfillment.” Two students suggested carrying a cellular phone could be “motivating” for students. Several participants (62%) used the word “responsible” to imply students had to take ownership for good behavior, “no cheating,” “no distracting ringtones,” and “no texting.” Participants also referred to some opportunities for “educational use” to carry a cell phone such as: reading, educational games, safety at school, and communicating plans. “Teacher permission” was referred to as the variable to control any NEW school cellular phone policy.

#### Population Demographics

Electronic survey results show the survey responses completed by Grades 6, 7, and 8. The population eligible to participate in the study from Central Middle School was 1638 students. A total of 974 students completed the online survey for a 59% response rate. In Grade 6, 397 out of a possible 564 completed the survey (70%). In Grade 7, 368 out of a possible 530 completed the survey (69%). In Grade 8, 209 out of a possible 544 responded, resulting in a response rate of 38%.



Table 7 displays gender data for participants that responded to the survey. The survey was almost equally split in gender with 49.9% of males and 51.1% of females responding to the survey in Grades 6, 7, and 8. Gender participation is representative of the Midwest suburban Central Middle School's gender demographics of 52.1% males and 47.9% females.

In Table 7 the sample by age of the population studied is illustrated. Responses were taken from the *Teen Cellular Phone Survey* (TCS) Question 1. Age categories were representative of middle level teens in Grades 6, 7, and 8. Survey respondents at age 11 included 37 males and 50 females (87), age 12 was comprised of 181 males and 170 females (351), the age 13 cohort included 173 males and 179 females (352), and at ages greater than 13, the group included 95 males and 89 females (184). Participants aged 12 and 13 represented the study's largest single age category at 72%.

Table 7. Age and Gender of Participants.

Age	Percent (Age) of Sample	<i>N</i>	Male Percent	<i>N</i>	Female Percent
11 ( <i>N</i> = 87)	10.8	37	42.5	50	57.5
12 ( <i>N</i> = 351)	32.3	181	51.6	170	48.4
13 ( <i>N</i> = 352)	35.4	173	49.1	179	50.9
>13 ( <i>N</i> = 184)	18.5	95	51.6	89	48.4
TOTAL ( <i>N</i> = 974)	100.0	486	48.9	488	51.1

\* Percent at each age level of total sample, e.g., 10.8% of sample was 11 years of age.

Shown in Table 8 is the percentage of ethnic representation of the population participating in the survey, including: Native American (2.5%), Hispanic (3.2%), Asian (4.4%), African Americans (6.6%), and Caucasian (83.4%). Responses were taken from

the *Teen Cellular Phone Survey* Question 2. All categories are closely representative of Central Middle School's ethnic population (Native American - 2.2%, Asian - 3.7%, Hispanic - 6.9%, African Americans - 7.0%, and Caucasian - 80.2%). The Hispanic population was the only category that was underrepresented in the survey with 3.2% participation in comparison to the possible 6.9% available (from enrollment figures of the Midwest Suburban School District participating in this study).

Table 8. Ethnicity of Participants.

Racial/Ethnic	<i>N</i>	Percent of Survey Respondents	Percent Midwest Ethnic Demographics*
Native American	24	2.5	2.2
Hispanic	31	3.2	6.9
Asian	43	4.4	3.7
African American	64	6.6	7.0
Caucasian	812	83.4	80.2
Total	974	100.0	100.0

\* Demographic data from the Midwest Suburban School District Central Middle School, May 2011.

## Research Questions

### *Research Question 1*

What is the current level of cellular phone ownership and usage by middle level teens in a Midwest suburban community? Displayed in Table 9 is data related to the question on popular communication devices used by families comparing traditional landlines versus cellular phone ownership. Respondents reported cellular phone ownership in 84.6% of their homes. Roughly, two in five respondents (37.6%) indicated their families only used cell phones (e.g., no landlines), while families that used traditional landline phone connections only (no cell phones) made up 2.5 of the sample). Responses were taken from the *Teen Cellular Phone Survey* Question 6. "Valid percent"

refers to those respondents who answered the items. It will always sum to 100.0 because the datum “ignored” non-respondents.

Table 9. Cellular Phone Ownership vs. Traditional Landline Ownership.

Category	Frequency	Valid Percent
Cellular phones (ONLY).	366	37.6
Only a landline telephone (not a cell phone).	24	2.5
A landline telephone and cellular phones.	584	60.0
TOTAL	974	100.0

One of the study’s primary questions was with respect to the level of teen cellular phone ownership by Central Middle School teens. Responses were taken from the *Teen Cellular Phone Survey*, Question 8. A majority (81.5%) of respondents reported owning cellular phones while 3.1% indicated they share a phone with their parents, and 15.4% stated they do not own a cellular phone. Responses to these questions are provided in Table 10. For the remainder of the study, when inferential analyses was employed as to Table 10. Teen Cellular Phone Ownership.

Cellular Phone Ownership	Frequency	Valid Percent
Own cellular phone.	794	81.5
I do not own my own cellular phone but share one with my family.	30	3.1
Do not own a cellular phone.	150	15.4
TOTAL	974	100.0

cell phone owners, the researcher used this variable to limit the analysis to students who either owned a cell phone or who shared one with a family member ( $N = 824$ ); this eliminated respondents who identified themselves as a non-cellular phone owner.



To understand why participants reported themselves as not owning a cellular phone, the researcher included an open-ended comment box in Question 8. Of the 15.4% of respondents who reported they did not own cellular phones, 62 of 150 respondents commented as to why they did not own a one. Categories that emerged from responses included: age, responsibility, cost, parent choice, parent sharing, safety, new to community, and no need.

“Age” was the most common response, given why a respondent did not own a cellular phone. Seventeen (17) of the 62 respondents (27%) mentioned “age” as a reason they did not own a cell phone. This may be reflective of the fact Grade 6 (40.7%) was the largest group of survey respondents. The following are direct comments from participants related to age:

- My parents think I am too young.
- No, because my dad thinks that I should wait until I am at least 12 and a half, but I might get one close to my birthday or just very soon.
- I can’t have one until I am 14.
- I can get one when I am 15 because that is when my sis got it.

The category of “responsibility” received 17 of 62 statements (27%) from respondents as to why the respondent was not a cellular phone owner. However, within this category, the researcher discovered respondents reporting themselves to be non-cellular phone owners were reflective of students who may have owned a cellular phone in the past, but were currently without a cellular phone. Thus, responses for the category of “responsibility” could be further defined as the need to show responsibility to become

a first-time cellular phone owner or the need to be responsible to continue ownership of a cellular phone. Direct respondent's comments included the following written statements:

- Because I got it taken away cause I took it being [when I was] grounded.
- Because my mom and dad don't think I need one until I get my driver's license.
- My parents want me to have a job and pay for it myself to teach me responsibility.
- [Because] I broke three of them [and in] ND if I bring a cell phone to school, it will get took away.
- My parents think I'm not responsible.
- I lost my phone, but I'm getting a new one in a week.

"Parent choice" and "cost" were key factors reported by respondents as the rationale for not owning a cellular phone. Twenty percent (13 of 62) of the respondents stated their parents, "don't think they need one" [cellular phone], "don't want them to have one," or "won't buy them one." Cost resonated as a sub-category of parent choice with 11% (7 of 62) of respondents reporting this as their parent's justification for not allowing them to own a cellular phone. Statements included:

- Because we have a big family, and she'll have to pay a lot.
- No money for such a thing, and it ruins people's lives.
- My dad said I can get a cellular phone when I am able to buy one and pay the bills for it.
- Not enough money to buy one.

## Teen Ownership of Popular Technology Devices

Responses were taken from Question 5 of the TCS and self-reported by respondents. Table 11 was compiled to give insight into the survey respondent's perceptions of accessibility to today's most popular technology devices in their home.

Table 11. Self-Reported Frequency of Popular Technology Devices.

Technology Device	Frequency	Valid Percent
Cellular phone	853	87.60
Internet access	849	87.20
Xbox or Wii	793	81.40
Laptop	736	75.60
Desktop	630	64.70
MP3 player	599	61.50
iTouch	445	45.70
Smart-phone	298	30.60
E-reader (ex. Kindle)	168	17.20
iPad	156	16.00

Respondents were given the option to select multiple technology device categories. The valid percent represents the frequency of respondents who have access to technology in each category in comparison to the total number of survey respondents who actually ventured a response to the item ( $N = 974$ ).

Cellular phones were the most popular technology of choice at 87.6% of respondents mentioning cell phones, with Internet access close behind at 87.2%. Gaming systems such as Xbox and Wii were reportedly used by 81.4% of the respondents, outweighing computer use. Survey respondents reported using laptops more often than desktops at 75.6% compared to 64.7%, respectively. Over half of the respondents



(61.5%) reported having access to an MP3 player. Less than half of the respondents reported access to the following technologies: i-Touch (45.7%), Smart-phone (30.6%), E-reader (17.2%), and iPad (16.0%). The survey question also gave survey participants the option to contribute other technologies not on the list. Responses included television, cable net, iPod, play-station, blue-ray, PSP, DS, DVD, and radio.

A cross-tabulation comparison of access to popular home technology devices as a function of ethnic categories is provided in Table 12. Responses were taken from TCS Questions 5 and 7. On average, Hispanics reported the highest percent of cellular phone ownership at 96.8% with Caucasians close behind at 90%. Smart-phones were most prevalent among Asian students at 37.2% and Native Americans were next in line for using smart phones at 33.3%.

Data indicated laptops are more popular than desktops in all ethnic categories. Hispanics reported the greatest percent of laptop ownership at 80.6% while Caucasians reported computer desktop access in their home to be at 66.1%. Technology devices for entertainment such as MP-3 Players were most popular with Hispanics at 67.7% while X-Box or Wii were used more by white students at a reported 85.2%. Native American participants reported the highest access to the Internet at 91.7% while African Americans reported the lowest access at 65.6%. The iPad and e-Reader were most popular with Asian students at 25.6% and 18.6%, respectfully. Finally, iTouch ownership was most prevalent among white students at 48.4%, while African Americans were less likely to own an iTouch at 29.7%.

Table 12. Respondent Home Access to Popular Technology Devices by Ethnicity.

	African American (N = 64)		Asian (N = 43)		Native American (N = 24)		Hispanic (N = 31)		White (N = 812)	
<b>Category</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>
Cell Phone	43	67.2	30	69.8	19	79.2	30	96.8	731	90.0
Smart Phone	14	21.9	16	37.2	8	33.3	6	19.4	254	31.3
Laptop	41	64.1	29	67.4	18	75.0	25	80.6	623	76.7
Desktop	37	57.8	27	62.8	14	58.3	15	48.4	537	66.1
MP-3 Player	28	43.8	22	51.2	14	58.3	21	67.7	514	63.3
Internet Access	42	65.6	32	74.4	22	91.7	25	80.6	728	89.7
IPad	8	12.5	11	25.6	4	16.7	5	16.1	128	15.8
ITouch	19	29.7	14	32.6	8	33.3	11	35.5	393	48.4
e-Reader	7	10.9	8	18.6	3	12.5	4	12.9	146	18.0
X-box or Wii	36	56.3	24	55.8	17	70.8	24	77.4	692	85.2

A cross-tabulation was used to further analyze access-to-technology-devices by gender and by race/ethnicity. However, due to small numbers in some of the racial/ethnic categories, results produced cell sizes with expected frequencies less than five, thus invalidating chi-square tests. In order to generate an appropriate group size for frequency analysis, the racial/ethnic variables were converted to a two-level (bivariate) variable. Because using all racial categories in cross-tabulations with gender and each “access” variable produced expected cell sizes less than five, the racial-ethnic variable was re-coded as a bivariate distribution (white/Euro-American vs. students of color). This allowed for the chi square analyses of the cell size problems, except where noted.

Table 13 compares access to popular devices in relation to gender and the bivariate group of white versus students of color.

Table 13. Gender Comparison Bivariate Distribution (White vs. Students of Color).

Device	Male				Female			
	White		Student of Color		White		Student of Color	
	Access	No Access	Access	No Access	Access	No Access	Access	No Access
Cell phone ( <i>N</i> ) (%)	350 84.5	51 15.5	64 70.8	21 29.2	38 2.7	30 7.3	58 75.3	19 24.7
Smart Phone ( <i>N</i> ) (%)	138 35.4	263 65.6	30 35.3	55 64.7	116 18.2	295 81.8	14 28.2	63 71.8
Laptop ( <i>N</i> ) (%)	303 75.6	98 24.4	66 77.6	19 22.4	320 77.9	91 22.1	47 61.0	30 39.0
Desktop ( <i>N</i> ) (%)	264 65.8	137 34.2	53 62.4	32 37.6	273 66.4	138 33.6	40 51.9	37 48.1
MP-3 Player ( <i>N</i> ) (%)	261 65.1	140 34.9	48 56.5	37 43.5	253 61.6	158 38.4	37 48.1	40 51.9
Internet Access ( <i>N</i> ) (%)	361 90.0	40 10.0	65 76.5	20 23.5	367 89.3	44 10.7	56 72.7	21 27.3
I-Pad ( <i>N</i> ) (%)	61 15.2	340 84.8	16 18.8	69 81.2	67 16.3	344 83.7	12 15.6	65 84.4
I-Touch ( <i>N</i> ) (%)	201 51.1	200 49.9	33 38.8	52 61.2	192 46.7	219 53.3	19 24.7	58 75.3
e-Reader ( <i>N</i> ) (%)	64 16.0	337 84.0	16 18.8	69 81.2	82 20.0	329 80.0	6 7.2	71 92.8
X-box or Wii ( <i>N</i> ) (%)	346 86.3	55 13.7	62 72.9	23 27.1	346 84.2	65 15.8	39 50.6	38 49.4

No interaction existed between racial groups and access to cell phones among males, but with females the chi-square statistic was significant ( $\chi^2$ ,  $df = 21.7$ ,  $p < .001$ ). The significant difference was produced because many more white female students (92%) had cellular phones, while only 75.3% of females of color indicated this level of access.

No difference between males or females on the variable of gender was noted in ownership of smart-phones. Thus, it can be inferred males, females, and students across racial and ethnic groups enjoyed similar levels of access to smart-phones. Further, no differences in access to laptops by racial groups were noted for males. However, the



effect for females was significant ( $\chi^2$ ,  $df = 9.839$ ,  $p = .002$ ). The significant chi-square was produced by moderately higher access to laptops on the part of white females versus female students of color (78% vs. 61%).

No statistically-significant differences were noted between ethnic groups for males with regard to the ownership of desktop computers. For females, however, a significant result accrued ( $\chi^2$ ,  $df = 5.91$ ,  $p = .019$ ). The significant inferential test resulted from the fact a significantly higher proportion of white females reported access to desktop computers than did their counterparts of color (about 66% vs. 52%).

Noteworthy is evidence of differences in Internet access amongst whites and students of color for both males and females. About 90% of white students reported access while students of color reported access at 70%.

With new technologies such as iPad, iTouch, and e-Reader, no differences in access to iPad devices were noted between genders or ethnic groups. All groups demonstrated access levels between 15% and 20%. Ownership of iTouch technology was close to being an effect with males, but the difference was not significant. However, there were again differences between ethnic groups for females in the ownership of iTouch technology (about 46% white vs. 24 % students of color). Females of color had less access than did white females. Electronic reading devices, such as e-Readers, were the least owned technology device by gender and between ethnicities with all reporting no access (about 80% to 92%).

Technology entertainment devices such as MP3 players, X-Box and Wii game systems were analyzed to compare perceived ownership by gender and ethnicity. Again, there were no observed differences between males within ethnic groups regarding access;

however, there were again major differences between white females and female students of color with game systems (about 84.2% vs. 50.6%).

Over half (56%) of teen cellular phone owners reported having no responsibility for their cellular phone ownership, while others indicated some level of responsibility for owning a cellular phone. Responsibility levels were self-reported as: paying for a portion of the bill (5%), doing chores (6.5%), and keeping their grades up in school (14.3%). In comparing gender and ethnicity, there were no major differences between males. However for females of color, only 37.7% of the parents paid for their cell phone with no other requirement, whereas white females self-reported parents paying at 62.3%. Evidently, a technology gap exists for females with white girls having more access than their counterparts of color. In Table 14 an analysis of teen cellular phone responsibility levels is provided.

Table 14. Who Pays for Teen Cellular Phones?

	Male		Female	
	White	Student of Color	White	Student of Color
Parents Pay ( <i>N</i> )	225	35	256	29
(%)	56.1	41.2	62.3	37.7
Parents & Self ( <i>N</i> )	20	5	22	2
(%)	5.9	5.0	5.4	2.6
Exchange Chores ( <i>N</i> )	21	7	29	6
(%)	7.5	8.2	7.1	7.8
Maintain Grades ( <i>N</i> )	53	13	59	14
(%)	13.2	15.3	14.4	18.2
NA ( <i>N</i> )	82	25	45	26
(%)	20.4	29.4	10.9	33.8

Table 15 displays data gathered from Question 10 of the TCS to evaluate differences between gender and ethnicity levels regarding the shared or individual

ownership of a cellular phone or lack of owning a cellular phone. Differences were observed between ethnic groups for both males and females. White males and females considerably exceed students of color for individual cellular phone ownership. It was evident students of color are less likely to own a cellular phone or share one with their family than white students.

Table 15. Which Option Describes Teen Cellular Phone Ownership?

	Male		Female	
	White	Student of Color	White	Student of Color
Share Cell w/Family ( <i>N</i> )	8	8	10	10
(%)	2.0	9.4	2.5	13.0
Individually Own ( <i>N</i> )	328	55	362	43
(%)	82.0	64.7	88.7	55.8
Do Not Own ( <i>N</i> )	64	22	36	24
(%)	16.0	25.9	8.8	31.2

In examining the age at which teens reported first owning a cellular phone (Question 11, TCS), no significant findings accrued among females and males or across ethnic groups (whites vs. students of color). Ages 11 and 12 appeared to be the most common ages at which males and females of both ethnic groups acquired their first cellular phone. No significant differences occurred as to *why* teens obtained cellular phones (by self-request or parent purchase) by gender or ethnic group.

Question 15 of the TCS was the final question related to ownership. Teens were restricted to one choice. In Table 16, a clear majority of student respondents identified texting as their primary reason for owning a cell in this forced-choice item. This was followed by calling (24.6%) and safety (15.8% of those reportedly owning a phone). Very few respondents selected games/music, video, or internet access (all less than 1%).



Table 16. Primary Reasons for Owning a Cellular Phone.

Primary Reason*	Frequency	Valid Percent
Texting friends and family	429	58.4
Calling to stay in touch with family or call for a ride	181	24.6
Safety: It makes me feel safe	116	15.8
Games and music: Entertainment when I am bored	4	.5
Video and photos: Video and phone camera	3	.4
Internet access: To access web tools	2	.3
Total	735	100.0
Missing System	240*	
Total	975	

\* Items are in descending order by valid percentage.

\*\* Reasons for large missing N unknown, except that teens may not have understood what was asked of them—data were analyzed only for students owning a phone.

Table 17 depicts the multiple ways that teens use their cell phones.

### *Research Question 2*

What opportunities or distractions are generated through cellular phone use?

Except for texting, no statistically significant differences for gender or race/ethnicity occurred. Further, 85.3% of all subjects with phones used them for texting, or at least reported doing so. For taking photos, there were no racial differences for males, but a significant racial difference for females. Significantly fewer students of color ( $N = 28$ , 53%), as opposed to white females (with cell phones;  $N = 281$ , 76%) reportedly employed them for taking photos. A significantly greater percentage of white females took photographs and shared them with friends and/or family ( $N = 219$ , 58.9%) than did females of color ( $N = 22$ , 41.5%). Thus, females of color are again showing some limits in use of cell phones. No significant differences accrued between genders or ethnic

Table 17. Cell Phone Use (of those indicating they have a cell phone) in Descending Order by Percentage (significant differences indicated).

Use	Overall Number and Percent Indicating Use		Gender X Race differences (Commentary) ( $\chi^2 < .05$ )
	N	Percent	
Texting	703	85.3	No significant racial/ethnic by gender differences
Taking photographs	562	68.2	Significantly more White Females proportionately took photographs (N = 281, 75.5%) than did Females of Color (N = 28, 52.8%)
Sharing photographs with friends and family	399	48.4	Significantly more White Females proportionately shared photographs (N = 219, 58.9%) than did Females of Color (N = 22, 41.5%)
For entertainment, music, videos, and etc.	376	45.6	No significant racial/ethnic by gender differences
Organizing personal information (e.g., calendars)	315	38.2	No significant racial/ethnic by gender differences
Social networking	217	26.3	No significant racial/ethnic by gender differences
Looking up information on the internet	209	25.4	No significant racial/ethnic by gender differences

groups in use of cellular phones for entertainment (45.6%), organization of information (38.2%) social networking (26.3%), and to look up information on the Internet (25.4%). These findings are summarized in Table 18.

Table 18. Cell Phone Use (of those indicating they have a cell phone) in Descending Order by Percentage (significant differences indicated).

Use	Number and Percent Indicating Use		Gender X Race differences (Commentary) ( $\chi^2 < .05$ )
	N	Percent	
Texting	703	85.3	No significant racial/ethnic by gender differences
Taking photographs	562	68.2	Significantly more White Females proportionately took photographs ( $N = 281$ , 75.5%) than did Females of Color ( $N = 28$ , 52.8%)
Sharing photographs with friends and family	399	48.4	Significantly more White Females proportionately sharing photographs ( $N = 219$ , 58.9%) than did Females of Color ( $N = 22$ , 41.5%)
...For entertainment, music, videos, and etc.	376	45.6	No significant racial/ethnic by gender differences
Organizing personal information (e.g., calendars)	315	38.2	No significant racial/ethnic by gender differences
Social networking	217	26.3	No significant racial/ethnic by gender differences
Looking up information on the internet	209	25.4	No significant racial/ethnic by gender differences

To examine the level of parent/guardian control or influence over a child's cellular phone use, Question 17 of the *Teen Cellular Phone Survey* (TCS) posed to students some of the most common rules and monitoring techniques used by parents/guardians. As multiple selections were allowed, value labels were assigned a numeric value of "not selected" (coded as "0") if not used, and "selected" (coded as a value of "1") if students reported parents using a particular rule or monitoring technique listed in the question. Analysis revealed insignificant differences between gender and ethnic groups regarding parent supervision and monitoring of their cellular phone use. A lack of parental rules or monitoring had the greatest frequency of responses at 36.5%.



The most common parental rule, as self-reported by respondents, was not using cell phones while eating in public at 32.2%. Table 19 indicates parent rules most frequently reported in use, the most important values by percent of student who indicated their parents took (or did not take) certain actions.

Table 19. Cell Phone Use with Rules and Monitoring (of those indicating they have a cell phone) in Descending Order by Percentage (no significant differences indicated).

Use	Number and Percent Indicating Use		Gender X Race differences (Commentary) ( $\chi^2 < .05$ )
	<i>N</i>	Percent	
No parent rules or monitoring	301	36.5	No significant racial/ethnic by gender differences
Not use when eating in public	266	32.3	No significant racial/ethnic by gender differences
Check my text	233	28.3	No significant racial/ethnic by gender differences
No use during family time	208	25.2	No significant racial/ethnic by gender differences
Parent look at my photos	150	18.2	No significant racial/ethnic by gender differences
Limit use during the day	91	11.0	No significant racial/ethnic by gender differences
Turn in at night	87	10.6	No significant racial/ethnic by gender differences

Cellular phones can create a distraction for teens when they are used late at night. Question 18 of the TCS determined how teens use their cellular phone at bedtime. A majority of the students ( $N = 511$ , 57.9%) self-reported answering their phone whenever they receive a message, while ( $N = 132$ , 25.8%) self-reported leaving their phone on at bedtime but not answering it. The frequency of students self-reporting they turn their phone off or turn their phone into a parent at bedtime was insignificant. Females self-reported fewer restrictions at bedtime than males (62.3 to 53.1%). Table 20 displays

insignificant differences between gender and ethnic groups in respect to cellular phone restrictions at bedtime.

Table 20. Cellular Phone Use at Bedtime. Self-Reported Bivariate Ethnic: White vs. Students of Color. Gender Cross-Tabulation.

	Male		Female	
	White	Student of Color	White	Student of Color
Bedtime Restrictions ( <i>N</i> )	92	22	91	10
(%)	45.1	56.4	38.1	34.5
No Restrictions ( <i>N</i> )	112	17	148	19
(%)	54.9	43.6	61.9	65.5

Research indicates cell phones produce a perceived level of safety for their owners. To examine this theory, Question 19 of the TCS required teen cellular phone owners to specify whether or not, or to what degree, cells made them feel safe. Overall, 91.4% of the respondents saw a connection between cell phones and safety. No significant difference accrued across racial and ethnic categories. However, more females (65.4%) endorsed the choice “to keep in contact with parents and guardians.” More white males (*N* = 192, 62.1%) vs. male students of color (*N* = 24, 45.3%) chose “to contact parents.” Table 21 was used to show the frequency levels students reported per variable.

Table 21. Cellular Phone for Safety. Self-reported Bivariate Ethnic: White vs. Students of Color. Gender Cross-Tabulation.

Use	Number and Percent Indicating Use		Gender X Race Differences (Commentary) ( $\chi^2 < .05$ )
	Freq	Percent	
Can contact parents	460	62.6	No significant racial/ethnic by gender differences
Can call police in time of danger	146	19.9	No significant racial/ethnic by gender differences
Can call or contact a friend	66	9.0	No significant racial/ethnic by gender differences
Cellular phone have no safety influence	63	8.6	No significant racial/ethnic by gender differences

Question 20 of the Teen Cellular-Phone Survey determined teen perceptions of cellular phone ownership in relation to their social life. Table 22 displays the frequency and valid percent responses for each forced-choice selection. Note adjustments were made in data calculations to eliminate non-respondents ( $N = 296$ ) which appeared as missing data. Of the missing data respondents, 239 of the 296 perceptions were captured in open-ended comments. Themes emerging from the open-ended comments included: calling and texting of friends to hangout, safety, and statements that cellular phones don't impact social life.

Table 22. Teen Perceptions of Cellular Phones on their Social Life.

Primary Reason **	Frequency	Valid Percent
All of my friends have phones	328	62.1
I can talk to my friends about problems	133	25.1
I need it for my social networking	51	9.7
It makes me look cool	16	3.0
Total	735	100.0
Missing System	296 *	-----
Total	975	-----

\* Missing number largely represents those respondents that did not answer the question.

\*\* Items are in descending order by valid percentage.

Further analysis of teen perceptions of cellular phones on social life revealed differences between genders and ethnic groups as displayed in the bivariate analysis in Table 23. There is a substantial difference in ethnic group perceptions of owning a cellular phone due to friendships, male (white - 72.4% vs. students of color - 50%), and female (white - 56.6% vs. student of color - 40.7%). There was also a noteworthy effect



for females (whites - 6% vs. students of color - 25.9%) in perceptions of cellular phones for social networking.

Table 23. Cellular Phone and Social Life. Self-Reported Bivariate Ethnic: White vs. Students of Color. Gender Cross-Tabulation.

Category	Male		Female	
	White	Student of Color	White	Student of Color
All my friends have them ( <i>N</i> )	165	19	133	11
(%)	72.4	50.0	56.6	40.7
I need it to social network ( <i>N</i> )	23	7	14	7
(%)	10.1	18.4	6.0	25.9
It makes me look cool ( <i>N</i> )	6	3	5	2
(%)	2.6	2.9	2.1	7.4
I can talk to friends about problems ( <i>N</i> )	34	9	83	7
(%)	14.9	23.7	35.3	25.9

Since males and females tend to respond differently to social factors, a separate gender-based analysis was completed. Statistically more males (*N* = 184, 69.2%) versus females (*N* = 144, 55%) reported owning cells “because of their friends.” However, in comparing gender “use” perceptions, significantly more females (*N* = 90, 34.4%) versus males (*N* = 43, 16.2%) self-reported that cellular phones are important in their social life to talk to friends about problems. The chi square statistic for females was significant ( $\chi^2$ , *df* = 23.296, *p* < .001).

Question 26 of the TCS was posed—related to the sending and receiving of indecent or nude photos. Table 24 revealed a statistically significant ( $\chi^2$ , *df* = 9.936, *p* = .007) difference between gender and ethnic responses. Significantly more male students of color (24.4%) reported having received an indecent or nude photo than did their white male counterparts (12.6%). More female students of color (4.7%) self-reported sending indecent photos versus white females. In a gender-only comparison, a significant

difference ( $\chi^2$ ,  $df = 11.555$ ,  $p = .003$ ) was reported by twice as many males receiving indecent photos (14.2%) than females (7.2%), while females self-reported sending more indecent photos (2.7%) than males (1.4%). This difference is objectively too small to interpret.

Table 24. Cellular Phone to Send/Receive Indecent Photos. Self-Reported Bivariate Ethnic: White vs. Students of Color. Gender Cross-Tabulation.

Category	Male		Female	
	White	Student of Color	White	Student of Color
Received an indecent photo (F)	39	14	24	3
Received an indecent photo (%)	12.6	26.4	7.3	7.0
Sent an indecent photo (F)	3	2	8	2
Sent an indecent photo (%)	1.0	3.8	2.4	4.7
Neither sent/received a photo (F)	267	37	298	38
Neither sent/received a photo (%)	86.4	69.8	90.3	88.4

Intimidation or harassment using a cellular phone can be viewed as a distraction for teens. To examine the level of cellular phone intimidation occurring, Question 27 of the TCS was used to collect this data. As self-reported by students, 23.4% (Table 25) had received an intimidating message or phone call, with 28.4% of these reports coming from females and 18.2% from males. Further examination would need to determine if females are intimidated more than males or if there are differences in perceptions between genders on what constitutes intimidation. It must also be noted, for unknown reasons, 89 participants did not respond to the question, thus percentages were averaged based on actual responses.

Table 25. Cellular Phone for Intimidation. Self-Reported.

Primary Reason	Frequency	Valid Percent
Have received and intimidating message or call	172	23.4
Have sent and intimidating message or call	42	5.7
Neither sent or received and intimidating message or call	521	70.9
Total	735	100.0
Missing System	89*	-----
Total	824	-----

\*Missing number largely represents those respondents that did not answer the question.

### *Research Question 3*

What are teen perceptions of how they use cellular phones to communicate in their everyday lives? To evaluate teen texting and calling usage levels, Questions 13 and 14 of the *Teen Cellular Phones Survey* (TCS) were analyzed. However, using the original survey question intervals for the number of texts and calls made per day generated a large gap between the first choice and the remaining choices (Appendix B). To create a statistical measureable analysis for this data, the researcher recreated the variable as bivariate, with a broader range of intervals to eliminate counts < 5 in order to aid interpretation.

In Table 26 the range of cellular phone calls made per day as self-reported by teens. Chi square indicated the existence of a significant difference between female students of color vs. white ( $\chi^2$ ,  $df$ , = 4.10,  $p$  = .055). No significant differences across racial/ethnic categories among male respondents were found. Specifically, female Students of Color are the only group making 10 or more phones calls per day.



Table 26. Number of Calls Per Day. Bivariate \* Ethnic: White vs. Other. Self-Reported Gender Cross-Tabulation.

Category	Male		Female	
	White	Student of Color	White	Student of Color
1-10 calls per day (N)	271	39	283	29
(%)	86.4	12.6	90.7	9.3
> 10 calls per day (N)	35	10	44	10
(%)	77.8	22.2	81.5	18.5

In Table 27 the range of text messages sent per day as self-reported by teens are shown. There were no significant differences when completing a bi-variate analysis of race with gender. However, a cross-tabulation comparison across genders indicates proportionately more females (50.5%) report texting more frequently than males (40.3%) over 51 text messages per day.

Table 27. Text Messages Per Day. Self-Reported Gender Cross-Tabulation.

Category	Male	Female
0-10 text messages per day (N)	65	37
(%)	18.3	10.1
11-30 (N)	91	77
(%)	25.6	21.0
31-50 (N)	56	67
(%)	15.8	18.3
>51 (N)	143	185
(%)	40.3	50.5

To examine the overall method teens preferred to use in communicating with their friends, Question 21 of the *Teen Cellular Phone Survey* (TCS) was generated. Table 28 compared the most common modes of communication by gender and ethnic groups, with frequency and valid percent displayed. Consistently, all groups reported face-to-face conversation to be their most popular mode of communication, ranging from 48.7% to 53.5%, followed by texting, calling, and social networking. E-mail is almost obsolete

with this generation. When comparing communication modes, White females rank the highest for fact-to-face (53.5%), White males for texting (40.2%), male students of color for calling (10.2%), and female students of color for social networking (10.3%).

Table 28. Teen Preferred Modes of Communication. Self-Reported.

Category*	Male		Female	
	White	Student of Color	White	Student of Color
Face-to-Face (N)	149	23	175	20
(%)	48.7	46.9	53.5	51.3
Texting (N)	123	19	129	12
(%)	40.2	31.7	39.4	30.8
Calling (N)	20	5	15	2
(%)	6.5	10.2	4.6	5.1
Social Networking (N)	12	2	8	4
(%)	3.9	4.1	2.4	10.3
E-mail (N)	2	0	0	1
(%)	.7	0	0	2.6

\* Items are in descending order by valid percentage.

When teens were asked in Question 22 of the TCS what their main purpose was for using their cellular phone to communicate with friends, overwhelmingly, responses were just to talk with friends. In Table 29 frequencies for each category by all respondents can be found. Data indicates 103 of the 824 (12.5%) cellular phone owners did not respond to this item. Although this was a forced answer question, an Internet disruption occurred during the survey collection process which may have contributed to this inconsistency. To accurately account for the missing data, respondent results were calculated and averaged based on the actual number of responses.

Table 29. Primary Reason Teens Communicate with Friends. Self-Reported.

Primary Reason**	Frequency	Valid Percent
Just to talk with friends	539	74.8
To make plans	142	19.7
About assignments at school	22	3.1
To talk about concerns with friends	13	1.8
To talk about family problems	5	.7
Missing System*	103*	12.5
Total	824	-----

\* Missing number largely represents those respondents that did not answer the question.

\*\* Items are in descending order by valid percentage.

Displayed in Table 30 is evidence about students self-report using cellular phones to call or text while not in school, but in public. Overall, females self-reported behaviors which would constitute better etiquette than males when using their cellular phones in public. Both genders are more likely to text than call in front of others. While males are more likely to call anytime anywhere, females are most likely to text anytime anywhere. Public cellular phone use can be linked to research on cellular phone etiquette.

Table 30. Cellular Phone Use in Public. Self-Reported by Gender.

Category	Male	Female
Answer phone calls anytime, anywhere (N)	87	57
(%)	24.5	15.6
Put cell phone on vibrate or move to a private location (N)	88	79
(%)	24.8	47.3
Text messages anytime, anywhere (N)	126	161
(%)	35.5	44.0
Text messages when I am not talking to friends or family (N)	54	69
(%)	15.2	18.9



#### Research Question 4

How does teen cellular phone use effect the school environment? Study Question 4 focuses on how teen cellular phone use affects the school environment (Central Middle School). When students were asked in Question 23 of the *Teen Cellular Phone Survey* how they used their cellular phone to communicate to a friend in class, despite the institution's no-cellular-phone policy. It was evident ethnicity was not a factor; however, gender differences were apparent. Responses admitting to behaviors were low, which could be inferred students recognized this question as [requiring admission to] a rule violation. However, in analyzing the respondent data who admitted to using cell phones in class, males were more likely to admit to cheating on a test than females (6% to 2.5%), using the Internet to look up information during a test (4% to .5%), and share information during class (5.0% to 2.3%). In Table 31, comparisons of respondents self-reported to specific cellular phone behaviors in class by gender count and percentages can be found.

Table 31. Cellular Phone Usage in Class. Self-Reported by Gender.

Category	Male	Female
To text information about a test to a friend (N)	29	12
(%)	6.0	2.5
To look up information from the Internet during a test (N)	16	2
(%)	4.0	.5
To share information about an assignment during class (N)	20	10
(%)	5.0	2.3
Share information regarding an assignment (N)	20	10
(%)	5.0	2.3

In Table 32 are frequency counts and percent data derived from Question 24 of the TCS when students were asked whether they carried their cell phone during the school day despite the school's rule to house them in their locker. There was a slight variance between ethnic groups, yet differences in gender were significant ( $\chi^2$ ,  $df=$

18.826,  $p < .001$ ). A majority of males (52.7%) and females (68%) follow the school's rules; while some students do not carry their phone to school at all, 14.6% to 9.8 respectively. However, 32.1% of males and 22.1% of females violate the rule by carrying phones in school.

Table 32. Carrying Cellular Phone during School Day. Self-Reported by Gender.

Category	Male	Female
I store my cellular phone in my locker (N)	187	249
(%)	52.7	68.0
I do not carry my cellular phone in school (N)	52	36
(%)	14.6	9.8
I carry my cellular phone but keep it on vibrate (N)	73	45
(%)	20.6	12.3
I carry my cellular phone, but turn it off (N)	43	36
(%)	12.1	9.8

Central Middle School teens were asked to consider, if they had access to their cellular phone during the school day, how they would use it (Item 25, TCS). More males versus females reported interest in using the cellular phone for calendar features (48.7% to 40.8%), the Internet (35.9% to 27.9%), and to look up school activity information (31.7% to 24.9%). White females were more likely to consider their cellular phone for note-taking than female Students of Color (46.4% to 30.2%). A high percentage of students (41.9%) across gender and racial/ethnic groups indicated they would use their cellular phone to check grades. One fourth (25.2%) reported interest in using their cellular phone to access on-line textbooks. Teens reported having minimal interest in using their cellular phone at school to communicate with the classroom teacher and e-mailing at school. Table 33 compares differences as they occurred between genders as opposed to racial/ethnic groups.

Table 33. School Access to Cell Phone Use (of those indicating they have a cell phone) in Descending Order by Percentage (significant differences indicated).

Use	Overall Number and percent indicating use		Gender X Race differences (Commentary) ( $\chi^2 < .05$ )
	N	Percent	
Use calendar function	368	44.7	No significant racial/ethnic, but slightly more White males proportionately selected this item (N = 194, 48.7%) than did Females (N = 174, 40.8%)
Take notes during class	363	44.1	Significantly ( $\chi^2$ , $df = 4.929$ , $p = .026$ ). more White females proportionately selected this item (N = 173, 46.4%) than did females of Color (N = 16, 30.2%)
Check my grades	345	41.9	No significant racial/ethnic by gender differences
Use Internet features to look up information for assignments	262	31.8	A moderate yet statistically significant ( $\chi^2$ , $df = 6.065$ , $p = .014$ ). difference by gender males proportionately selected this item (N = 143, 35.9%) than did females (N = 119, 27.9%). This was influenced by ethnic/racial groups
Look up information on school activities	232	28.2	No significant racial/ethnic, but slightly more White males proportionately selected this item (N = 126, 31.7%) than did females (N = 106, 24.9%)
Access online textbooks.	208	25.2	No significant racial/ethnic by gender differences
Send e-mail	143	17.4	No significant racial/ethnic by gender differences
Communicate with teacher	125	15.2	No significant racial/ethnic by gender differences

Table 34 reported responses from Questions 28 of the *Teen Cellular Phone Survey* which explored how parents may influence teen cellular phone use during the school day by initiating communication. A significant difference by gender and racial/ethnic groups occurred ( $\chi^2$ ,  $df = 11.456$   $p = .003$ ). Female students of color self-reported more cellular phone use to make connections with parents during the school day



than did males. White females (47.1%) are more likely to communicate with their parents using text messaging than female students of color (35.9%). Just the opposite is true for calling, with twice as many female students of color (33.3%) reporting receipt of phone messages than did White females (12.8%). Data suggest that males are less likely to interact with their parents during the school day. Thirty to forty percent of students and parents utilize the school office to communicate messages during the school day.

Table 34. Teen Communication w/Parents during School Day. Self-Reported.

Category <sup>1</sup>	Male		Female	
	White	Student of Color	White	Student of Color
Parent calls cell to leave a message (N) (%)	51 16.7	10 20.4	42 12.8	13 33.3
Parent sends a text message (N) (%)	133 43.5	15 30.6	154 47.1	14 35.9
Parents contact the school office to leave a message. (N) (%)	122 39.9	24 49.0	131 40.1	12 30.8

How teens communicate with their friends during the school was necessary to explore as it can create disruptions for the school environment. Analyzing question 29 of the TCS, there were no differences among ethnic groups, yet variances between genders. Over two thirds of the student body (67.5%) waits to talk to friends between classes. Females are more likely to follow the rules than males, with 80.9% of females waiting to talk to friends between classes (Males=73.2%). Males are more likely (23.7%) as compared to female peers (17.5%) to send a text message during the school day to visit with a friend. Data suggest student attempts to call friends during the school day is minimal. Table 35 shows students' self-reported frequency rates of communication with friends during school day.

Table 35. Communicate with Friends during School Day. Self-Reported.

Primary Method	Male	Female
Wait to talk between classes (N) (%)	260 73.2	296 80.9
Send a them a text message (N) (%)	84 23.7	64 17.5
Call and leave a message (N) (%)	11 3.1	6 1.6

Displayed in Table 36 is data from Question 30 of the TCS survey to obtain teen student perceptions on how school personnel react when students are in violation of the schools cellular phone policy. (Analysis of TCS data thus far indicates students admit to carrying and using their cellular phones during the school day). A large number of females (43.7%) and one third of males (31.8%) report they do not carry their cellular phone during the school day. However, more males (45.4%) than females (36.8%) report having their phone confiscated by school personnel and turned into the office. This would make sense, since more males admit to carrying their cellular phone during the school day as compared with females. Ten percent of males and females indicate teachers do not report students carrying or using cellular phones during the school day.

Table 36. School Personnel Actions to Cell Phone Infractions. Self-Reported.

Teacher Action	Male	Female
I do not carry my cellular phone during the school day. (N) (%)	113 31.8	160 43.7
Take my cellular phone and turn it into the office. (N) (%)	161 45.4	142 36.8
Know I carry my cellular phone but do not report it. (N) (%)	36 10.1	36 9.8
Know I carry, but ask me to turn it off. (N) (%)	32 9.2	23 6.3
Let me use my cellular phone for texting. (N) (%)	13 3.7	5 1.4

Research suggests Gen-M teens have been raised with technology, creating a natural ease to explore new ways for using technology in their daily lives. An open-ended, Question 32 on the TCS was used to gather teen perceptions about how they would use cellular phones for learning at school. Of the 824 survey respondents identified as cellular phone owners, 648 contributed comments to the question. The open-ended question format allowed respondents to identify multiple ideas, thus resulting in 968 comments (879 for cellular phone learning, and 89 opposed or unsure). The data outlined in Table 37 were categorized using the same method described for collecting focus group data. Results revealed 14 themes and 63 elements. Below are specific student statements regarding their ideas how cellular phones could be used for learning:

- You could use it as a computer while you are in class to use it for assignments but have teacher permission.
- If everyone had a phone with internet access, the lessons could be online and therefore easy for students to access when they needed it, except for tests and quizzes.
- You could have internet access at all times.
- Instead of using a computer you could just use your phone and you can even check your grades.
- We could video call and stuff during school and like text about stuff.
- I think they would be helpful for putting when assignments are due into the calendar so that if I forget and I don't have my agenda with me, I can just look on my phone.



- Phones could be used for learning in school if we could go on the internet for certain information or use it as an agenda for our calendar and also we would be using less paper and killing less trees if we could take notes on our phone.
- Cellular phones could be used to share information about assignments with fellow classmates. They could also be used to ask others questions.
- We could talk to other students and see what we're learning in our other classes.
- Instead of having to buy calculators and laptops we could just use our phones.
- I can use it to look up videos for math or even be able to use the calculator.
- To take notes and store them for when needed.
- Taking notes and using them if they are at a store waiting to check out they can study.
- I think that they could be a better way to get kids to pay more attention in class if they get they "think" they are texting because then they get to write notes on their cell phones.
- The teachers could apply educational apps to use to learn things in class.
- You could go online to use books instead of carry them around everywhere, or they take up space in your locker.
- I think that they could be good things for school. Kids would love to take notes then because you can save them in your memo pad or in your notes. Then when you need calculators you wouldn't need to, but them because

your cell phone has one! Kids do EVERYTHING on their cell phones so i don't see why it's so bad in school, if kids could have their cell phones and class and were able to have them for school purposes they would learn and pay attention ten times better; i know i would.

- It can't really? Kids wouldn't use it for learning. We have kids that would go against the rule of using it only for learning at school.
- I don't think they should be used because you cannot monitor everyone at the same time so they could be doing something they are not supposed to and I can't really think of any reason we would need to.

Table 37. Teen Perceptions of Cellular Phones for Learning. Self-Reported with Multiple Responses Per Item.

Themes	Freq. %	Definition/Description of Themes	Elements
Internet	257 39%	Statements were categorized as “Internet” when participants made comments that described how they would use cellular phones to look up or search for information from web sites.	Look up information for papers and projects. Checking school events. Check grades Online textbooks Use instead of laptops Check school websites – SharePoint
Share Information	155 23%	Statements were categorized as “Share Information” when participants described how they would use cellular phones to communicate between peers, teachers or parents.	Share information with peers Ask questions to peers or the teacher To ask about assignments, get answers Talk to students in other classes Send assignments/notes to students who are sick. Text answers to vote. Send parents a text when plans change Contact the teacher, counselor or principal.
Math/Calculator	121 18%	Statements were categorized as “Math/Calculator” when participants made comments about how they would use cellular phones calculators in isolation or for math.	Calculator for math. Calculate grades.
Notes	118 18%	Statements were categorized as “Notes” when participants stated how they would use cellular phones to takes notes in class or for organization.	Use the notepad to take notes in class. Use notes to study when on vacation or at the store. Research and take notes Take notes and text them to a friends
Calendar	78 12%	Statements were categorized as “Calendar” when participants made comments about how they would use cellular phones to organize homework deadlines, important dates or alarms for reminders.	Use as an agenda Keep up with e-mails Reminder for tests and notes Plan for tests Track assignments Keep track of school activities Use alarm as a reminder when assignments are due.
Assignments	49 7%	Statements were categorized as “Assignments” when participants described how they would use cellular phones to help them complete homework or projects.	Ask information for assignments Can be used for polls or testing Check grades for assignments Homework deadlines Reading and writing Use as a computer



Table 37. Continued.

Themes	Freq. %	Definition/Description of Themes	Elements
Online Resources	41 6%	Statements were categorized as “Online Resources” when participants stated how they would use cellular phones to access online books, applications or tutorials.	Online tutorials Online textbooks Learning applications
Engage/Motivate	28 4%	Statements were categorized as “Engage/Motivate” when participants made comments that using a cellular phone in school would help them pay attention or excite them to learn.	To keep active during the day. Use entertainment tools when work is done. Learn more about technology. Can use it any time. I love them. It would be fun Good for responsibility
Spelling	13 2%	Statements were categorized as “Assignments” when participants described how they would use cellular phones to look up words or use it at a dictionary.	Learn how to exactly write words. Dictionary for online text. Look up words. Look up definitions.
Emergency	19 2% 879	Statements were categorized as “Emergency” when participants referenced the use of their cellular phone to contact someone for help.	Emergencies In case of fire or tornado. Contact friends if you are sick. Call 911 in case of a school shooting. Contact parents if you are sick
No Cell at School	56 8%	Statements were categorized as “No Cell at School” when participants stated that they didn’t believe cellular phones should be present in school or could be used for learning.	They shouldn’t use at school because they will go on Facebook. Kids will break the rules. They can’t be used for learning. They wouldn’t be educational. They would distract from learning. They wouldn’t help. They could be used for cheating.
Unsure	33 5%	Statements were categorized as “Unsure” when participants stated that they didn’t know how cellular phones could be used for learning in school.	I don’t know. Don’t have a reason. NA
Total for Learning	879 77%		
Total No or Unsure	89 13%		
Total Responses	968		

The researcher chose to exclude Question 34 from the *Teen Cellular Phone Survey*, “If you were given the task to create a NEW cellular phone guideline for the Midwest Suburban School District, what would it be?” The question was eliminated from the study as the researcher recognized from focus group data, when asked the same question, comments did not yield results to contribute to the study. On further analysis, the researcher realized the questions emphasis was on managing teen cellular phone use through school policy versus the study’s purpose to determine teen perceptions of cellular phones as a communication tool.

Chapter V contains the summary, discussion, limitations, conclusions, and recommendations for this study.

## CHAPTER V

### SUMMARY, DISCUSSION, CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

*“To best understand this new vision of engaging, enabling and empowering learning through technology, it is first imperative that we understand the realities of technology use in today’s classroom.” (Project Tomorrow, 2011, p. 4)*

#### Preamble

The purpose of the study was to determine teen perceptions of cellular phones as a communication tool by teens in a suburban Central Middle School, and to evaluate how cellular phones influence communication in their daily lives and at school. Guiding the study were the original research questions:

1. What is the current level of cellular phone ownership and usage by middle level teens in a Midwest suburban community?
2. What opportunities or distractions are generated through cellular phone use?
3. What are teen perceptions of how they use cellular phones to communicate in their everyday lives?
4. Does teen cellular phone use affect the school environment?

This study identified differences in perceptions of teen cellular phone users as self-reported by grade level, gender, and ethnic groups (white vs. students of color). Stratified sampling was used to select middle level students in Grades 6, 7, and 8 to participate in focus groups. The open-ended survey method of focus groups permitted the researcher to gather unforeseen insights and identify themes related to teen perceptions of



teen cellular phone use. The researcher designed a survey instrument and questions, the *Teen Cellular Phone Survey (TCS)*. Four levels of testing were utilized to authenticate the survey for reliability and face validity and for online data collection.

Data were collected from participants in Grades 6, 7, and 8 enrolled at the Central Middle School (CMS) of the Midwest Suburban School District (MSSD) involved in this study. At the time of the study, May 2011, the District's enrollment was little over 1,600. Located in the growing Midwest suburban community of Midwestville, CMS was also experiencing growth, along with changes in its student body to an environment containing diverse cultures. Federal and state education requirements have influenced changes to Central Middle School's programming, while access to new technology devices have been changing the methods educators utilize to teach. Today's *i-Gen* style of learners and demands from parents are also altering how teachers engage learners.

The researcher analyzed the study data to evaluate the perceptions of teens in regard to cellular phone use and how they use them to communication in their daily lives and schools. It is evident from the study results there are differences in access to today's most popular technologies amongst gender and ethnic groups. Findings also indicate males and females use cellular phones differently to communicate. Results showed, depending on the phone's feature or user's actions, variances exist between male white students and students of color in how they are using cellular phones to communicate. One of the most compelling discoveries was the significant disparity in access to technology between female students of color and all other categories of gender and ethnicity (white females, white males, and students of color). Findings indicate female students of color

had limited access to technologies such as computers, laptops, and the Internet, and they did not use the cellular phone to communicate at the same rate as their peers.

## Discussion

### *Research Question 1*

What is the current level of cellular phone ownership and usage by middle level teens in a Midwest suburban community? It was evident from the data, described in Chapter IV, cellular phones significantly impact the lives of teens in Central Middle School as a large number of teens own cellular phones. The researcher was surprised at focus group perceptions reporting 80-100% cellular phone ownership by friends of participants. Results of the *Teen Cellular Phone Survey* reported actual cell phone ownership of respondents, ages 11 to 14 participating in the study at 87.6%. When compared to the literature, this is significantly higher than the findings from Lenhart (2009) reporting teens ages 12-17 are the fastest growing market of cellular phones users at 75%, and a report by the Kaiser Family Foundation Study (Rideout et al., 2010) reporting 66% for teens 8-18. As a researcher, study data indicate Midwest suburban teens demonstrate a higher level of access to cellular phones than their peers across the nation.

Findings indicate parents may also be contributing to the increased ownership of teen cellular phones, as only 2.5 % of the respondents reported family dependency on a landline, while 37.6% identified themselves as cell phone-only homes. Again, this is significantly higher than the literature reporting one-in-four (25%) United States households are cell phone-only. Most Central Middle School teens (60%) suggest they are dual phone households, cellular phone and landline owners. The researcher interprets

this as a shift in the evolution of technology as home phones are being replaced by newer mobile technology devices. It also suggests cellular phones are influencing communication styles, as today, adults and teens prefer to communicate while on the go rather than at home.

Research revealed Central Middle School is growing in its ethnic diversity. Due to this change, the researcher was curious to analyze the level of cellular phone ownership by ethnic groups. Ethnic groups included: African American, Asian, Native American, Hispanic, and white. All groups reported higher percentages of cellular phone ownership versus that of a smartphone. Hispanic students reported the highest level of cellular phone ownership at 96.8%, whites at 90%, Native Americans at 79.2%, Asians at 69.8%, and African Americans at 67.2%. Overall, all CMS ethnic groups reported higher levels of cellular phone ownership as compared to the literature. The literature reported cell phone ownership as follows, with Hispanics at 56-62% and African Americans at 50% for ages 10-18, and southeast Asian countries reporting Japan at 65%, Korea at 80%, and China 52% (GSM Association & NTT DOCOMO, 2009). The researcher again interpreted the study's results as proving Central Middle School teens, regardless of ethnicity, have greater access to cellular phone technology than their peers across the globe.

The researcher's attempt to understand the level of cellular phone access by CMS ethnic groups is important as it contributes to understanding how cellular phones could be used as a learning tool by all students. One may speculate service access and affordability in Midwestville is making it feasible for diverse users and teens to own cellular phones. Results serve to prove this growing trend in cellular phone ownership among ethnic



groups has the most potential among modern trends in technology usage and ownership to close the digital divide between ethnic groups and populations of lower socio-economic status in the Midwest and the more affluent populations in American society.

A historical review of the evolution of educational technology served as a foundation for this study. As the cellular phone is presumed to be one of the latest technological phenomena, the researcher was curious to analyze how cellular phone ownership compared to other popular home technology devices for CMS teens. Interestingly, cellular phones were reported to be the most popular device at 87.6% with Internet next in line at 87.2%. Interesting were teens reporting significantly lower levels of computer ownership with laptops at 75.6% and desktops at 64.70%. Based on this data, one can conclude the evolution of technology continues as this most recent technological invention, the cellular phone, is replacing and surpassing existing technologies as the latest and greatest gadget.

The researcher was compelled to further analyze ownership of popular home technology devices by gender and racial/ethnic groups (white vs. students of color) as a means to better understand CMS student access to all technology. Using data from the *Teen Cellular Phone Survey*, results revealed teens have similar uses for cellular phones, yet at times, there are significant discrepancies between gender and ethnic groups. One pattern consistently emerging was the lack of ownership and use of all technologies by female students of color, yet there were minimal difference between male ethnic groups. There is a significant inequity between white females and female students of color regarding access to cellular phones at (92% and 75.3%, respectively). Males in both ethnic groups reported similar access to laptop computers, while white females had a

moderately higher level of access to laptops than students of color (78% vs. 61%). Males again reported similar access to desktop computers, while white females versus students of color again reported disparities (66% vs. 52%). Variances were also evident with i-Touch technologies and entertainment devices. First impressions of TCS data percentages led to an assumption that all teens had equal access to technology. However, further analysis revealed the digital divide still exists with respect to all popular technology devices, and a conscious effort must be made to increase opportunities for minorities to access technology.

Identification of the level of teen cellular phone owners served as a basis for the study. However, interpreting whether their ownership was personal or shared with family was necessary, so teens were asked to describe what cellular phone ownership looked like within their family dynamics. Interestingly, differences emerged among ethnic groups. A majority of white males (82.0%) and females (87.2%) described owning their own cellular phone, with only 2% sharing a phone with their family. On the contrary, students of color are less likely to own a personal cellular phone, with males at (64.7%) and females at (55.8%). Concurrently, more students of color reported sharing a cellular phone with their family, with males at (9.4%) and females (13%). One could interpret socioeconomic conditions as a factor in creating this dynamic as families must share cell phones due to expense. However, it would be interesting to determine if cultural values contributed to the sharing dynamic.

Although a significant number of teens self-reported owning a cellular phone, the data actually revealed teen and family sharing of phones. This is a critical detail as schools seriously consider and evaluate the potential of using cellular phones as a

learning tool. If teens have inconsistent access to cellular phones, gaps will occur in student performance. For schools and teachers attempting to implement cellular phones as learning tools, a prerequisite must be to develop a plan to accommodate for non-cellular phone users.

Data in Chapter IV revealed Central Middle School teens had minimal monetary responsibilities for their ownership of a cellular phone; yet, responsibility was a major factor as to why teens were not allowed to own a cellular phone. It was not surprising when most students who did not own a cell phone reported non-cellular phone ownership because their parents felt they were not of a responsible age. Based on CMS demographics, the researcher anticipated a higher percent of white families paying for their child's phone, which was confirmed from survey data with females at (62.3%) and males (56.1%). Surprisingly, the percent was much lower than anticipated for students of color at 37.7% for females and 41.2% for males. Interestingly, more students of color (females, 18.2%; males, 15.3%) were required to maintain their grades to own a cellular phone than whites (females, 14.4%; males, 13.2%). Although not significant, this data reveals cellular phones serve as an incentive to motivate teens.

It was evident from the data the primary reason teens own a cellular phone is for texting. Of the 824 teens either owning or sharing a cellular phone with their family, 58.6% reported they owned a phone for texting. Calling was reported to be a factor for only 24.6% of teens while "safety" came in third at 15.8%. It was evident teens prefer to text versus call to communicate, thus confirming the literature's characteristics of *i*-Gen communication styles.



### *Research Question 2*

What opportunities or distractions are generated through cellular phone use? The literature established new technologies typically meet resistance before adoption, and may be debated as toy or tool due to perceived opportunities and distractions for users. Results of the study's focus group data and *Teen Cellular Phone Survey* concluded this pattern existed for Central Middle School teens as well. The following information was evidence as to how cellular phones created opportunities and contributed to distractions for teens in Central Middle School.

Teens at CMS perceived cellular phones to create opportunities for them through Internet access, organization tools, and communication features. Although the researcher assumed there would be differences in how teens used cellular phones based on observations, Chapter IV confirmed differences clearly exist between genders, and at times, ethnic groups.

It was not surprising all groups reported the use of texting to be their most popular cellular phone feature at 85.3%. It was evident males and females in both ethnic groupings used their cellular phones to take photos; however, there was a significant difference between white females (75.5%) and students of color (52.8%) in using their cellular phone as a camera. Students of color were significantly less likely to share photos with family and friends (58.9% vs. 41.5%). The researcher recommends further exploration of these discrepancies to determine if they exist due to a lack of understanding, cellular phone capabilities, lack of calling plan services, or other unknown variables.

Surprisingly, there was no evidence from the data indicating the use of cellular phone entertainment applications, social networking features, organization tools, or the Internet play a significant role in teen cellular phone use among gender or ethnic groups. Based on observations, the researcher anticipated social networking would be an important factor for females due to Facebook and males would report the use of cellular phones to play games. This is another example of the importance of this study and how it may help to better understand the phenomenon of how teens are actually using cellular phones to communicate.

In reviewing the literature, numerous claims were made as to how cellular phones create a sense of safety for teens. This study confirmed CMS teen perceptions paralleled this belief in the literature with 91.4% of teens associating cellular phone access with some form of safety. The most common response by CMS teens was the use of cellular phones to contact parents for rides or to make plans for after school activities. Interestingly, white females and males were more likely to keep in contact with parents and guardians versus students of color. Students also commented on wanting access to phones in school so they could call a parent when sick. The researcher interpreted this data to be characteristic of the *i*-Gen's need for connectedness, their anytime anywhere expectations, and increased parent beliefs in technology integration at school. As a researcher, it could be insightful to explore why students of color are less likely to communicate with family members.

As an assistant principal, the researcher has fielded numerous comments from students regarding the receipt of inappropriate messages, parent concerns about harassment, and teacher/researcher observations of poor etiquette. Questions were asked

on the TCS to determine if parents were involved in defining rules and/or in monitoring their child's cellular phone use. It was evident many parents (36.5%) do not set rules or monitor their child's cellular phone use. However, teens did report parents do check their text messages and photos, or have them turn their phone in at night, but it was insignificant. The most common parent cellular phone rule of etiquette was for teens not to use their phone when eating in public (32.3%). Data did reveal some parents limit their child's cell phone use during family time and the number of hours they could use their phone during the day. Results would indicate increased parent involvement is needed in regard to their teen's cellular phone use.

The literature in Chapter II presented the idea of today's teens as "Free Agent Learners." The researcher was curious to discover if Central Middle School teens were representative of this theory, and what opportunities they envisioned cellular phone could be used for as a learner. In an open-ended response question, a majority (87%) of the survey's participants presented ideas. Using cellular phones to access Internet resources was the popular response. Student perceptions were also to replace laptops with cellular phones to access online resources, applications, textbooks, and learning games. Teens described using cellular phones to share information on assignments and school activities with peers and family, while having the ability to interact with the teacher regarding assignments. The use of cellular phone tools such as the calculator, dictionary, note pad, and calendar were referenced as ways in which they would use cellular phones to support themselves in the classroom and for managing their assignments. A small group of respondents also felt being able to use a cellular phone in school would motivate them to



learn. The researcher interpreted these responses as indications that CMS students were thinking as free agent learners.

In the researcher's observations of middle level teens, it appeared teens were obsessed with their cellular phones. Once school was out for a day, students immediately located their phones for use and continued to use them while with groups of friends. During the review of the literature, claims were made as to how cellular phones create distractions for teens due to social pressures and demands for 24/7 communication. Chapter IV data revealed a majority of Central Middle School teens (57.7%) reported answering their phone whenever receiving a message. As most teens reported not turning their phones into parents at night, it could be interpreted teens have been answering calls or messages late in the evening. Most interestingly, a higher percentage of males reported having bedtime restrictions for their cell phones than females, while females in both ethnic groups reported having no bedtime restrictions.

The researcher was interested in determining the perception of Central Middle School teens regarding cellular phones and impacts of cell phones on their social life. A majority (62.1%) reported having a cellular phone because their friends had one. There was a significant difference in ethnic group perceptions of owning a cellular phone due to friendships, as white males and females reported a greater relationship between cellular phones and friendships than students of color. More females than males reported using their cellular phones to contact friends about problems. Realizing this social pressure exists, this researcher perceived social pressure (or peer pressure) to be a catalyst for cellular phone diffusion which will contribute to the presence of cellular phone technology within our population well into the future.

The researcher's final examination of study Question 2 was to analyze whether Central Middle School teens experienced distractions due to the exchange of inappropriate materials through cellular phone communication. Unfortunately, data suggested CMS teens have been dealing with these forms of disruptions. Significantly more male students of color (24.4%) have received an indecent or nude photo than white males (12.6%). More female students of color (4.7%) self-reported sending indecent photos versus males or white females. In a gender only comparison, a significant difference was reported by males receiving an indecent photo 14.2% of the time versus females receiving indecent photos 7.2% of the time. Females self-reported sending more indecent photos (2.7%) than males (1.4%). Based on results, it is obvious education must continue regarding harassment and appropriate cellular phone use as issues that need addressing. As a researcher, it would be interesting to determine if females were sending inappropriate photos at will or due to social pressures from peers encouraging them to be sent, and which motivation (willingly or because of peer pressure) was most prevalent.

Almost one-third (29.1%) of Central Middle School teens reported being distracted due to intimidation or harassment through cellular phone communication. This is consistent with literature resources on cyberbullying which reported teen distractions range between 32-38% by teens ages 11-18 (Lenhart, 2007). CMS females reported higher rates of intimidation or harassment than males, which was also consistent with the literature. In order to thoroughly understand this pattern, further examination would need to determine if females are intimidated more than males or if there are differences in perceptions between genders on what constitutes intimidation. Again, this confirms

education must continue regarding harassment and appropriate cellular phone use as issues that need addressing.

### *Research Question 3*

What are teen perceptions of how they use cellular phones to communicate in their everyday lives? Central Middle School teens have identified texting and calling as the primary use for their cellular phones. According to the literature review in Chapter II, teens have admitted to spending an equal amount of time texting versus calling. However, CMS teens reported texting more often than calling, making approximately 10 calls per day compared to the sending of over 51 text messages per day. Comparing data with statistics from the literature, CMS females (50.5%) reported texting as the most frequent form of communication over phone calling more than CMS males (40.3%). This is comparable to the literature reports where 54% of females have reported texting more than phone calling and 40% of males reported texting more than calling.

As an assistant principal, the researcher had the opportunity to watch teens with their cellular phones texting while with friends. From these observations, the researcher was interested to know whether today's teens are losing the interest to socialize with friends without technology as their media. Surprisingly, Chapter IV data revealed a majority (50.4%) of teens across both genders and ethnic groups prefer face-to-face conversations with their friends. Texting was second (39.3%), but not close, followed by calling, and social networking. It was evident e-mail has been losing its appeal as less than 1% reported its use. Comparing overall communication modes by gender and ethnicity: white females rank the highest for preferring face-to-face communication (53.5%), white males for texting (40.2%), male students of color for calling (10.2%), and



female students of color for social networking (10.3%). As collaboration is a skill needed for the 21<sup>st</sup> century, either through face-to-face communication or technology, schools will need to design curriculums to support students in developing both skill sets so as not to lose one skill or the other (or so as not to advocate one skill used by one social group, but not another, and therefore leave a social group behind other groups in the struggle for self-actualization.).

The final analysis relating to Research Question 3, is regarding teen cellular phone use for daily communication related to etiquette. As cellular phones have been diffused into the daily lives of users, research suggests cellular phones have become a public annoyance and recommendations have been made to improve cellular phone etiquette. To determine Central Middle School teen awareness on the topic of public cellular phone use, teens were asked about texting and calling in public. Overall, female responses demonstrated better public etiquette as they put their phone on vibrate or minimized its use when in public. However, they were more likely to text anytime anywhere. Males were less likely to text anytime anywhere, but would text while talking to family and friends. Simply stated, females appeared to be more polite in public than males. The researcher was interested in knowing if their etiquette was due to their knowledge of appropriate cellular phone use in public, parent expectations, or if it was a natural difference in gender.

#### *Research Question 4*

Does teen cellular phone use effect the school environment? Although Central Middle School institutes a no cellular phone policy during the school day, teens self-report using cellular phones to share information during class and throughout the school

day. As some of these violations occur during testing, it can be inferred students admit to cheating. Chapter IV data discloses no differences between ethnic groups, yet slight differences between genders in use of their cellular phones during the school day. Evidence indicates males are twice as likely to cheat on a test or use their cellular phone to share information during class, violating the schools cellular phone policy. However, due to the collaborative nature of *i-Gen* teens and literature reporting a desensitization of teens regarding cheating as sharing information, the researcher would be curious to understand if CMS teens who reported sharing information during class and tests recognized it as a violation and/or form of cheating at all.

Central Middle School has required teens to store their cellular phones in their lockers during the school day. As an assistant principal, the researcher has heard comments that students have been carrying their cell phones all the time in school. The researcher was interested to find out what percent of students were actually in violation of the school's policy. In analyzing Chapter IV data, it was obvious the policy was ignored as survey respondents self-reported one third of males (32.1%) and one fourth of females (22.1%) carry their phone regardless of the policy. Data show teens carrying their phone are more likely to put their phone on vibrate versus turning it off, thus inferring they know the rule, but do not want to get caught. It also proves teens have cellular phone access to communicate throughout the school day, creating distractions for learners. Of the students carrying their cellular phones, it would be interesting to analyze what necessitates or motivates the behavior to violate the rule, their academic performance, and if other behavioral infractions exist.

It is obvious the primary purpose for cellular phones is communication, yet the researcher was unsure if middle level teens envisioned cellular phones as a learning tool. Chapter IV data revealed students do have an interest in using their cellular phone during the school as a productivity tool. Almost half (44%) indicated they would use their cellular phone to organize information using calendar features and for note-taking. Almost one thirds (28-32%) would use the Internet to look up information and check their grades. Males were more interested in looking up information related to school activities, which is reflective of the ratio of males to females enrolled in Central Middle School activities. One fourth (25%) of the students had an interest in using their cellular phones to access online textbooks. Surprisingly, males had more interest overall in using their cellular phone as an organizational tool than females.

As the assistant principal, the researcher has received parents' comments against the school's position on restricted cellular phone use at school. The literature also revealed parent's cellular phone usage can influence how teens use their cellular phones. Questions were posed in the TCS to determine whether there was a relationship between teens cellular phone use during the school day and parent influence. The study data in Chapter IV indicated Central Middle School teens do use their cellular phones to communicate with parents during the school day which is initiated by the parents when they call and/or text to leave a message for their child. Interestingly, white females were more likely to receive a text message from their parents to respond to, while female students of color were most likely to receive a parent voice message for return calling. Data inferences could be made that males were less likely to interact with their parents during the school day. Overall, 30-40% of the student body and parents utilized the



school office to communicate messages during the school day. Further analysis would need to be completed to determine when students respond to parent messages and calls: before school, during lunch, after school, or with teacher permission. The researcher would like to understand if students of color have limited texting cellular phone plans or if parents are just uncomfortable utilizing cellular phone texting.

When Central Middle School teens were asked how they actually communicate with friends during the school day, a majority (67.5%) indicated they waited to visit with them during class. Males reported more often than females to sending text messages to friends during the school day. Very few students attempted to use their cellular phone to call friends during the school day. Thus, it can be interpreted a majority of teens comply with school cellular phone use rules, yet one-third of teens are distracted by cell phones to communicate with friends.

To finalize analysis of Research Question 4 as to how cellular phones impact the school environment, teens were asked what actions school personnel took if they were caught carrying or using a cell phone during the school day. A large number of students (31-43%) reported they do not carry their cellular phones during the school day, thus do not contribute to distractions in the school environment. However, 36-45% of students admitted if school personnel were aware of their cellular phone or observed them using it, school personnel turned their cellular phone into the office in accordance with the school's policy. Unfortunately, it appears a small percentage of school personnel (3-10%) ignore the fact teens are carrying their cellular phones and/or permit them to use their phone during the school day. Conversely, additional research would need to be completed to determine if teens reporting school personnel oversight of their cellular phone use was

due to teacher permission for an assignment, personal philosophy against the school's policy, apathy, or refusal to enforce the school's cellular phone policy.

#### Limitations

This study was completed using the population from a single suburban middle school located in the Midwest. It is reflective of the student population enrolled in the Central Middle School at the time of the study and surveys conducted one time in May of 2011. Focus group perceptions were reflective of the members selected by the building administrator to anonymously participate in the panel and the effects the moderator may have had on the environment. Themes identified from focus group recordings and note-taker summaries were open to subjectivity based on the researcher's interpretation.

The *Teen Cellular Phone Survey* instrument was designed uniquely for the purpose of this study. Although multiple attempts were made to pilot test the survey to check for question clarity, vocabulary, spelling, format logic, reliability, and face validity, this was the first time this instrument was used in a research study. Chapter IV analysis of the data indicated allowing multiple responses to question items created multi-variant factors for data interpretation. This contributed to the complexity of the survey instrument and variations in which the data could be labeled and analyzed. The researcher would recommend multiple response questions be redesigned to force answers to specific questions for future studies. Also, as some participants were eliminated from survey participation as they self-reported to be a non-cellular phone owner, there may be perceptions excluded from the data reflective of middle level teen communication.

Implementation of the survey in May reduced overall participation in the study as some students were unable to access the survey at the end of the school year. Although

completing the survey during the school day did result in a 60% participation rate, implementation of the survey earlier in the school year would allow for a longer window from which to gather survey responses. The study had a low participation rate by eighth grade students which perhaps could have changed the overall results of the study based on their perceptions versus their peers.

The study was also influenced by the technology accessible at the time of the survey, May 2011. Technology is one of the fastest growing and ever-changing markets in today's economy. With that said, student perceptions regarding their cellular phone ownership and usage are reflective of the cellular phones and their specific features at the time of the survey. It is also reflective of the pricing and service availability by businesses located in the Midwest suburban community of Midwestville at the time of this report.

Finally, results of the survey are based on the perceptions of teens as self-reported by students the day of the survey. There is no way to ensure that student perceptions were not skewed by biases. It is also difficult to know whether students were honest in their answers, reporting what they believed and how they were actually using their cellular phones versus what they may have perceived to be the right or expected answer.

### Conclusion

The evolution of technology continues with the invention of the cellular phone and the growing market of teen cellular phone owners increasing across the nation and the globe. It is evident from the study, this trend holds true with this Midwest suburban community as middle level teen ownership surpasses national statistics. Parents influence teen cellular phone use as the percentage of cell phone only homes are quickly



increasing, while landline-only homes are almost non-existent. Parents also determine the age at which teens may own their first cellular phone; as in a majority of instances, trends indicated parents were paying for the device. The primary reason teens requested a cellular phone was for texting rather than calling. Cellular phones have been helping to reduce the digital divide as ethnic groups report higher percentages of cellular phone ownership and use. However, there are still gaps between ethnic groups regarding the most commonly used technology devices such as computers, laptops, Internet, and new technologies. The most significant gap in technology use occurs with female students of color reporting less access to technology devices overall than white females or males in all ethnic groups.

Cellular phones were recognized as friend, foe, toy, and/or tool by Central Middle School teens. As a friend, cellular phones were recognized as a major safety tool to connect with parents, get help, communicate with friends, and as way to learn. As a foe, the anytime anywhere, 24/7 access contributed to late night use, social pressures, etiquette concerns, and cyberbullying problems. As a toy, teens have been using cellular phones to take and share photos with family and friends, along with entertainment features to play music and games; yet differences were noted between gender and ethnic groups. As a tool, teens envision using cellular phones to access the Internet, use features for organization, and to use applications for school.

Teens suggested cellular phones impact their lives daily and the school environment. A majority of Central Middle School teens reported sending 50 or more text messages per day and making 10 or more calls. Although cellular phones appear to be popular with teens, over half would still prefer to communicate with their friends face-to-

face. Despite school policy restrictions regarding cellular phone use during the school day, one third of teens reported carrying or using their cellular phone during the school day to communicate with family and friends. Males were more likely to carry and use their cellular phone during the school. Parents contributed to teen cellular phone use during the school day as they would send text messages and/or call to leave messages for their children. A majority of school personnel assisted in reinforcing the schools no cellular phone use policy as violators were reported to the office. However, some inconsistencies did exist as to how the policy was being implemented at the time of this study which may have contributed to its ineffectiveness. Overall, students indicated an interest in using cellular phones beyond personal reasons in their daily lives toward learning in school.

### Recommendations

There are multiple levels of recommendations for this study as it confirms or denies information in the literature in respect to trends in teen cellular phone use, and the natural human state to resist or adopt new technologies. Data collected from this Central Middle School study will serve as baseline data for the Midwest Suburban School District to understand how its students use technology now and for planning into the future. Results of the survey will be used by the Midwest Suburban School District to develop a plan to educate stakeholders and explore cellular phones as a learning tool for teens. From this study, general recommendations were made for students, parents, and the school district as to what could be done to explore cellular phone opportunities in the school environment while managing distractions generated by its presence.

### *Recommendations for Students*

Teens must take responsibility for their use of technology, the latest being cellular phones. Students must recognize personal decision-making is part of the responsibility associated with being a cellular phone owner, and understand, “just because you can, doesn’t mean you should.” Today’s cellular phones are powerful mini-computers, with multiple features including cameras, Internet access, and communication features. Teens must learn how to use cellular phones appropriately and to realize acceptable use now extends beyond the computer and Internet to today’s handheld cellular devices. They must also apply moral and ethical behaviors to use cellular phones for good (organization, communication, and learning) and not to be malicious (harassment, disruptions, sexting, and cheating).

Teens must develop cellular phone etiquette so as to demonstrate respectful use of their cellular phones. Teens must learn and identify public locations in which cellular phone use should be minimized or eliminated. They must understand their actions impact those around them when using, talking, or texting with a cellular phone. This can be done through a conscious effort to understand when it is the best time to use a cellular phone and apply self-controlling behaviors. Teens must understand laws that mandate no texting while driving for safety.

Teens should accept responsibility to learn and understand behaviors considered harmful: harassment, bullying or cyberbullying. They must take responsibility to avoid initiating such behaviors and to report incidents when they occur. Teens should use cameras to take and transfer appropriate photos, and eliminate the sharing of photos



classified as indecent or exposed. Students should report when they receive messages with indecent or exposed photos.

Teens must take responsibility to adhere to school policies. Although *i*-Gen teens are technology savvy and drawn to communicating via technology, they must demonstrate ethical behavior to follow policy set in place. If teens are interested in pursuing changes to their schools policies, they should follow proper procedures through school personnel to voice their interests and ideas for creating this change.

Teens should continue to utilize technology and their natural skills to learn and grow as free agent learners to prepare for the 21<sup>st</sup> century world in which they will learn and work. Teens with limited access to technology should advocate for themselves to school leaders to secure and integrate technologies within the school's curriculum to assist in preparing them for the future.

#### *Recommendations for Parents*

Parents must assume the role of modeling, monitoring, and supervising their child's cellular phone use. As parents themselves increase their use of cellular phones for calling and texting, they must consciously take responsibility to teach and model cellular phone etiquette and appropriate use through their actions. This can be accomplished by defining the: who, what, where, when, and how for their own cellular phone use and sharing it with their children.

It is recommended parents communicate with their children to define rules and expectations for cellular phone use. As teens reported sending and/or receiving harassing or intimidating messages, parents should work with their children to define

expectations/parameters prior to their cellular phone ownership and use. This can be done verbally and/or through a formal contract including topics such as:

1. define a shared responsibility for cost,
2. establish hours for use,
3. set limits based on calling plans,
4. discuss prohibited or illegal behavior (texting while driving, sexting, etc.),
5. discuss cyberbullying and how to report cyberbullying,
6. develop strategies for using the cellular phone as a tool,
7. communicate parent expectations for monitoring cell phone use,
8. limit the amount of people who have access to the child's number,
9. complete random checks, and
10. establish natural consequences for inappropriate use.

It is recommended that parents can support their child's safety by pursuing their own education on cyberbullying and initiating actions to deal with cyberbullying. This can be accomplished by parents owning their own cellular phone, becoming free agent learners in respect to cellular phone use, attending workshops on cyberbullying, organizing a community campaign by parents to stop cyberbullying, getting to know their child's friends and parents, and working with their child's schools to understand and learn how the schools deal with cyberbullying.

#### *Recommendations for School*

Identifying the current level of teen cellular phone ownership and how teens use them to communicate is the first step in understanding the impact cellular phones have on a school's environment. The key is to use data to recognize and develop an action plan

for dealing with this new technology as it relates to the school environment. Schools may want to take the position of zero-tolerance for use of cellular phones in the school environment to avoid distractions. However, research in respect to the evolution of technology proves advancement in technology and society's reliance on these tools eventually transitions users and organizations in the direction of adoption. Thus, in learning from the past, the researcher recommends the Midwest Suburban School District and Central Middle School take a proactive position in redefining school policy to embrace cellular phones in the school environment, empower teachers to identify strategies for its implementation for learning, and engage students to become responsible users of this technology as 21<sup>st</sup> century learners. A proactive approach will increase the adoption possibility of innovators, early adopters, and early majority pragmatists while reducing the potential for late adopter skeptics, and laggards.

It is evident from the study, cellular phones create opportunities for learning, along with distractions for users. However, Central Middle School must consider the degrees to which the opportunities outweigh the distractions in order to prepare *i*-Gen students for the future. Based on teen perceptions gathered in this study's data, this researcher construes, the horse is already out of the barn. As a proactive school, this researcher recommends Central Middle School lead the charge in opening the discussion to pilot cellular phones as a learning tool for middle level teens. It is a given discussion and planning must occur to successfully make the transition, yet proactive acceptance of this most current trend will position students and teachers ahead of the late adaptors and laggards unwilling to take the risk.



As a result of this study, the following are recommendations related to use by teens of cellular phones that impact the school environment.

1. *Share the Study's Results.* The researcher would recommend data from this document be studied by the district administration and Central Middle School personnel to understand the degree at which cellular phones impact the lives of the Central Middle Schools teens and how students are using cell phones to communicate.
2. *Create Technology Opportunities for All Students.* The study revealed today's teens have access to numerous technology devices, yet the study revealed consistent disparities reported by female students of color in their access and use of technology. It is recommended Central Middle School target this population for future study and education to: (a) further research the female students of color population to determine if disparities between this population and other student populations are due to access to technology, limited skills, or cultural beliefs, (b) ensure female students of color have access to technology during the school day, (c) increase awareness among female students of color in respect to technology devices and terminology, (d) increase the integration of and technology within English Language Learner curriculums to assist all students in developing technology skills.
3. *Define a Systematic Approach to Educating Students on Cyberbullying.* One-third of the Central Middle School population reported sending or receiving intimidating, harassing, or inappropriate images. The researcher

would recommend the school: (a) define a systematic approach to educate students on the behaviors that constitute cyberbullying, (b) create a campaign to increase awareness regarding cyberbullying taking place in Central Middle School and work with teens to define a plan to commit to stopping the behavior, (c) increase activities related to cultural awareness to promote tolerance, (d) increase activities to help students develop self-esteem as to reduce opportunities for teens to become victims, and (e) develop a team to work on developing a positive school climate.

4. *Define a Systematic Approach to Educate Parents.* Educating parents can be the first defense in changing teen behaviors as many learn from and/or emulate their parent values and actions. It is recommended the Central Middle School: (a) publish cyberbullying information in monthly parent newsletters or on the school web site to increase parent understanding of cyberbullying and strategies for proactively dealing with cell phone behaviors with their children; (b) publish “Did you Know” information on cellular phone etiquette, cellular phone tips to begin the education process at home; (c) partner with the community to promote cultural awareness during orientations, back to school night, and parent-teacher conferences which may increase understanding and tolerance among students; and (d) coordinate plans with the CMS technology department to educate parents on current technologies to stay abreast of today’s resources.
5. *Develop a Cellular Team to Explore the Potential of Using Cellular Phones for Learning.* Research proves cellular phones have the potential to be used

as an organizational and learning tool. It is recommended the Central Middle School organize a team to explore the potential for using cellular phones for learning. The team would need to identify important factors such as: the school's technology capacity, curriculum related resources, school phone etiquette, classroom management procedures, student responsibilities, the sharing of cellular phones, features that can be used to help students organize assignments, and other ideas as defined by the committee.

6. *Provide Staff Professional Learning.* Following development of the CMS Cellular Team, a recommended educator training must be organized and implemented for teacher preparation. A select group of educators should be identified to pilot the cellular phone learning project and to make adjustments to create a successful school wide model for all students and educators.
7. *Review of the School District's Cellular Phone Policy.* In combination with the Cellular Team, it is recommended the Central Middle School review its current cellular phone policy to define a policy to allow cellular phone learning opportunities while maintaining a safe and orderly environment for students to interact. Ultimately, today's 21<sup>st</sup> century learners must be prepared to learn and work in a world driven by change and rapidly evolving technology. For this to occur, school administrators must serve as 21<sup>st</sup> century educational leaders and not managers, to create and not hinder these new technological learning and communication opportunities for today's students.



### *Future Research*

The researcher believes that further study in the following areas would be beneficial to better understand teen cellular phone use:

1. Identify whether girls are sending more nude photos by choice or due to requests from their male peers, and is this related to self-esteem issues.
2. Further examination is needed to determine if females are intimidated more than males when using cellular phones or if there are differences in perceptions between genders on what constitutes intimidation.
3. Further examination is needed to determine if students perceive the sharing of information or accessing information from the Internet using cellular phones during testing as cheating.
4. Determine what motivates teens to carry their cellular phone during the school day regardless of the school's policy.
5. Identify in the survey conducted during this study if parents have access to text features and/or do they know how to text as that may influence whether they call versus text their child.
6. Improve the survey instrument questions to: (a) better define intervals for texting and calling to determine daily use, (b) separate text and call responses in Question 31 as students could select both "put phone on vibrate" and "text anytime," (c) eliminate the number of multiple choice responses, (d) consider the use of a Likert-like scale to increase consistency in using the instrument for the future, and (e) explore specifically how

students are using texting to communicate with peers about assignments, homework, or to communicate with their teacher.

7. Consider implementation of the survey earlier in the school year to create a longer window from which to gather survey responses.
8. Increase the likelihood that more eighth grade students participate in the survey as their age and experience in using cellular phones may contribute to a different perspective regarding teen cellular phone use.
9. Eliminate Question 33 of the Teen Cellular Phone Survey related to student recommendations for a new school policy as it does not pertain to the perceptions of how teens are using cellular phones to communicate.
10. Survey parents to obtain their perceptions of cellular phones as a communication tool and their opinions of it as a learning tool.
11. Survey school personnel to acquire their perceptions of cellular phones as a communication tool and their view of it as a school learning tool.

## APPENDICES



## Appendix A

### **FOCUS GROUP MODERATOR GUIDE AND QUESTIONS**

Teen Cellular Phone Usage and Communication  
A Dissertation Research Study  
Focus Groups with Middle Level Teens, Grades 6-8  
May, 2011

#### **Focus Group Outline:**

- Facilitator: Lisa Klabunde
- Note-taker: Jessica Raile
- Group size: 8
- Grades:
  - 8<sup>th</sup> grade: 8:35
  - 6<sup>th</sup> grade: 9:35
  - 7<sup>th</sup> grade: 10:35
- Group participant diversity: gender balance, African American, Asian, Native American, cell phone users and a couple of now non-cell users, low-socio-economic.
- Students will be given a name tag with a Code ID.
- The session will be recorded for later reference by me as I will not be in the session.
- Comments will be coded to preserve anonymity.
- Time: 60 minutes

#### **Facilitating the Session:**

1. Introduce yourself and the co-facilitator.
2. Hand out participant ID name tags.
3. Establish Guiding Principles—"ground rules" for the focus group discussion (See Packet).
4. Explain the session will be recorded, so students should be loud and clear.
5. Carry out the questions below.
6. Carefully word each question before that question is addressed by the group. Allow the group a few minutes for each member to carefully record their answers. Then, facilitate discussion around the answers to each question, one at a time.
7. After each question is answered, carefully reflect back a summary of what you heard (the note taker may do this).

8. Ensure even participation. If one or two people are dominating the meeting, then call on others. Consider using a round-table approach, including going in one direction around the table, giving each person a minute to answer the question. If the domination persists, note it to the group and ask for ideas about how the participation can be increased.
9. Closing the session. Tell members that they will receive a copy of the report generated from their answers, thank them for participating.

#### **Immediately After Session:**

1. Verify if the tape recorder worked throughout the session.
2. Make any notes on your written notes, e.g., to clarify any scratching, ensure pages are numbered, fill out any notes that do not make senses, etc.
3. Write down any observations made during the session. For example, where did the session occur and when, what was the nature of participation in the group? Were there any surprises during the session? Did the tape recorder break?

**The purpose for today's focus groups is to learn more about how students are using cellular phones and how they use them to communicate.**

#### **Focus Group Questions**

1. Do all of you own a cellular phone? Why or Why Not?
2. What percent of your friends own a cellular phone?
3. What are the main reasons you like owning a cellular phone?
4. What cellular phones features do you use (texting, video, Internet, alarm, etc.)
5. What features do you like the best and how do you use them?
6. What rules did your parents give you for using your cellular phone? Do your parents monitor your cellular phone use?
7. In what ways do you use your cellular phone to communicate with your friends?
8. During the school year, how many hours per day do you spend:
  - a. Texting
  - b. Talking on your cell phone
  - c. Playing games
  - d. Social networking
  - e. other
9. In what ways do you think cellular phones can be helpful to teenagers?
10. Do you have any ideas of how cellular phones can be used for learning?
11. Do students use their cellular phones to cause harm to other students, how?
12. How do students use cellular phones when at school?
13. Do you think students follow the school's cellular phone policy, why or why not?
14. If you were given the task to create a NEW cellular phone rules for the [Midwest Suburban School District] what would it be?

## Appendix B

### TEEN CELLULAR PHONE SURVEY (TCS) INSTRUMENT

#### 1. Survey Disclaimer and Directions

This survey will obtain the perceptions of middle level teens regarding cellular phone usage and communication, grades 6 - 8. Thank you for your participation in the teen cellular phone survey. The purpose of the survey is to gain your thoughts on teen cellular phone use and how cellular phones are used to communicate by middle level teens.

The survey contains 33 questions and can be completed in approximately 5- 10 minutes. Thank you for answering each question honestly and to the best of your ability.

Waiver of Consent - Surveys will remain ANONYMOUS. While survey responses will be compiled by category, they will not be tracked by individual surveys.



**7. I have access to the following technology in my home. (Check all that apply)**

- ☐ Cellular phone
- ☐ Smart phone
- ☐ Laptop
- ☐ Desktop
- ☐ MP3 player
- ☐ Internet access
- ☐ iPad
- ☐ iTouch
- ☐ Kindle or ereader
- ☐ Xbox or Wii
- ☐ Other

Other (please specify)

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**8. Do you own a cellular phone?**

- ☐ Yes
- ☐ I do not own my own cellular phone but share one with my family.
- ☐ No
- ☐ If No, Why?

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**9. As a cellular phone owner:**

- ☐ My parent/guardian pays for my cellular phone bill and I am NOT responsible to for it.
- ☐ My parent/guardian pays for part of my cellular phone bill and I pay for part of it.
- ☐ I have to do chores to earn my cellular phone.
- ☐ I have to keep my grades up in school to earn my cellular phone.
- ☐ Not Applicable

### 3. Exit Survey Options

#### 10. Please answer the questions the best describes you.

- ☐ I share a cellular phone with my family, click Next to continue with the survey questions.
- ☐ I own a cellular phone, click Next to continue with the survey questions.
- ☐ I do not own a cellular phone, click Next to Exit the survey.

#### 4. Survey Questions

**11. At what age did you get your first cellular phone?**

- ☐ <8
- ☐ 9
- ☐ 10
- ☐ 11
- ☐ 12
- ☐ 13
- ☐ 14

**12. I received my first cellular phone because:**

- ☐ I asked my parent/guardian to buy me a cellular phone.
- ☐ My parent/guardian purchased a cellular phone for me without my knowing.

**13. Approximately how many phone calls do you make with your cellular phone in a day?**

- ☐ 1 to 10
- ☐ 11 to 20
- ☐ 21 to 30
- ☐ 31 to 40

**14. Approximately, how many text messages do you send or receive per day?**

- ☐ I do not have texting features
- ☐ 1 to 10
- ☐ 11 to 20
- ☐ 21 to 30
- ☐ 31 to 40
- ☐ 41 to 50
- ☐ 50 to 100
- ☐ 100>



**15. What is the primary reason you own a cellular phone?**

- ☐ Safety: it makes me feel safe.
- ☐ Texting: friends and family.
- ☐ Calling: to stay in touch with family or call for a ride.
- ☐ Games and music: entertainment when am bored.
- ☐ Internet Resources: access web tools.
- ☐ Video and Photos: video and phone camera.

**16. I use my cellular phone to (Check all that apply).**

- ☐ Send and receive text messages.
- ☐ Look up information on the Internet.
- ☐ Use social networking sites such as: Facebook, MySpace, etc.
- ☐ Organize information on my calendar such as: birthdays, homework, appointments, etc.
- ☐ Take photos with my phone camera.
- ☐ Share photos with family or friends.
- ☐ For entertainment: music, games, videos, etc.

**17. My parent/guardian (Check all that apply):**

- ☐ Do not permit me to use my cellular phone when eating in public.
- ☐ Limit the times during the day when I can use my cellular phone.
- ☐ Check my text messages.
- ☐ Look at the photos on my phone.
- ☐ Make me turn my cellular phone into them at night.
- ☐ Do not allow me to use my cellular phone during family time.
- ☐ My parents do not monitor my cellular phone use.

**18. At bedtime:**

- ☐ I turn my cell phone into my parents/guardian.
- ☐ I keep my cellular phone in my room but turn in off according to my parents bed time rule.
- ☐ I leave my cellular phone on, but do not answer it.
- ☐ I answer cell phone calls and/or text messages from friends whenever I receive them.

**19. Owning a cellular phone makes me feel safe because:**

- ☐ I can contact my parent/guardian when I need something.
- ☐ I can call a contact a friend when I need help with a problem.
- ☐ I can call the police in case of danger.
- ☐ Owning a cellular phone does not influence how I feel about being safe.

**20. Owning a cellular phone is key to my social life, because:**

- ☐ All of my friends have phones.
- ☐ I need it for social networking.
- ☐ It makes me look cool.
- ☐ I can talk to my friends about my problems.
- ☐ Other (please specify)

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**21. I prefer to visit with my friends:**

- ☐ Face-to-face
- ☐ Through e-mail
- ☐ By texting
- ☐ Talking to them over my cellular phone.
- ☐ Internet social networking sites (Facebook, MySpace, etc.)

**22. The main purpose for using my cellular phone to communicate with friends is:**

- ☐ About assignments at school.
- ☐ To make plans.
- ☐ To talk about concerns with friends.
- ☐ To talk about family problems.
- ☐ Just to talk about anything.

**23. During a class, I have used my cellular phone to: (Check all that apply):**

- ☐ Text information about a test to a friend.
- ☐ Look up information from the Internet during a test.
- ☐ Share information about an assignment with a friend during class.
- ☐ I have not used my cellular phone to share or look up information during class.

**24. During the school day:**

- ☐ I do not carry my cellular phone in school.
- ☐ I store my cellular phone in my locker.
- ☐ I carry my cellular phone with me, but turn it off.
- ☐ I carry my cellular phone with me, but keep it on vibrate.

**25. If I had access to my cellular phone during the school day, I would use it to:**

- ☐ Communicate with my teacher.
- ☐ Check my grades.
- ☐ Take notes in class.
- ☐ Use the calendar.
- ☐ Access online textbooks.
- ☐ Send e-mail.
- ☐ Look up information about school activities.
- ☐ Use Internet features to look up information for assignments.

**26. As a cellular phone user, I have:**

- ☐ Received an indecent and/or nude photo.
- ☐ Sent a indecent and/or nude photo.
- ☐ I have not sent or received a indecent or nude photo.

**27. As a cellular phone user, I have:**

- ☐ Received an intimidating text message or phone call.
- ☐ Sent an intimidating text message or phone call.
- ☐ I have NOT sent or received an intimidating text message or phone call.

**28. To communicate with my parent/guardian during the school day, they:**

- ☐ Call my cellular phone and leave a message.
- ☐ They send me a text message and I text them back.
- ☐ They contact the school office and leave a message, and I call them back.

**29. To communicate with my friends during the school day I:**

- ☐ Call them and leave a message on their cellular phone.
- ☐ Send them a text message.
- ☐ Wait to talk to them between classes or at lunch.



**30. During the school day, my teachers:**

- ☐ I do not carry my cellular phone in school.
- ☐ Know I carry my cellular phone, but do not report it.
- ☐ Know that I carry my cellular phone, but ask me to turn it off.
- ☐ Let me use my cellular phone to make phone calls or send a text.
- ☐ Turn my cellular phone in to the office if I am caught using it.

**31. When using my cellular phone in public places (not at school), I:**

- ☐ Answer phones calls anytime, anywhere.
- ☐ Put my cellular phone on vibrate and move to a private location to talk.
- ☐ Text message anytime anywhere.
- ☐ Text message when I am not talking to friends or family.

**32. Please describe how you think cellular phones could be used for learning at school.**

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**33. If you were given the task to create a NEW cellular phone guideline for West Fargo Public Schools, what would it be?**

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## 5. Thank You

Thank you for participating in the West Fargo middle school cellular phone survey. Results will be available to respondents in the future.

## 6. End Survey

Thank you for participating in the West Fargo middle school cellular phone survey.



Appendix C

PERMISSION TO CONDUCT SEARCH

Midwest Suburban School District



February 20, 2011

To Whom It May Concern,

This letter is to inform you that Denise D. Jonas has been given permission to gather information from Midwest Suburban School District students, certified school personnel, and parents regarding their perceptions of teen cellular phone use. Information gathered by the Midwest Suburban Public School District will be shared with Denise Jonas for research and assessment purposes, but the information shared will be the sole property of Midwest Suburban School District. The research project's final manuscript entitled Teen Cellular Phone Use and Its Perceived Effect on the School Environment at Midwest Suburban Central Middle School will be shared with Midwest Suburban Public Schools.

If you have further questions, please feel free to contact me.

Sincerely,

Superintendent  
Midwest Suburban Public Schools  
(701) 356-2000

Teen Cellular Phone Use and Its Perceived Effect on the School Environment

Appendix D

PERMISSION TO CONDUCT SEARCH

Central Middle School

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February 20, 2011

To Whom It May Concern,

This letter is to inform you that Denise D. Jonas has been given permission to gather information from Central Middle School students, certified school personnel, and parents regarding their perceptions of teen cellular phone use. Information gathered by the Midwest Suburban School District will be shared with Denise Jonas for research and assessment purposes, but the information shared will be the sole property of Midwest Suburban School District. The research project's final manuscript entitled Teen Cellular Phone Use and Its Perceived Effect on the School Environment at Midwest Suburban Central Middle School will be shared with Midwest Suburban Public Schools.

If you have further questions, please feel free to contact me.

Sincerely,

Principal, Central Middle School, Midwest Suburban School District

Teen Cellular Phone Use and Its Perceived Effect on the School Environment

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